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L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

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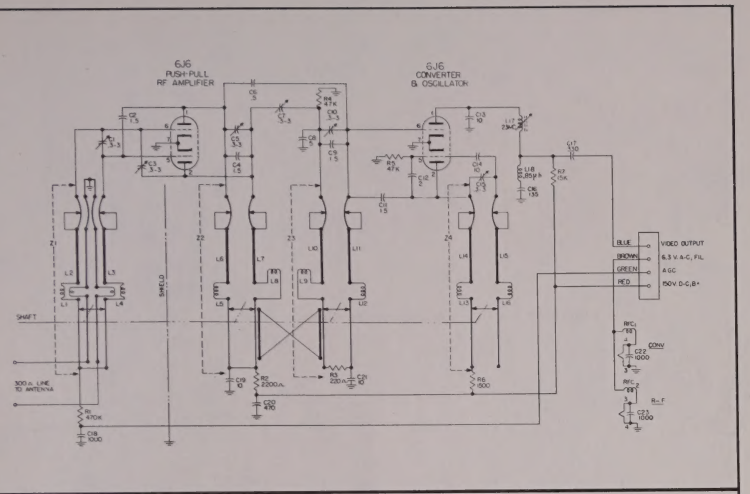

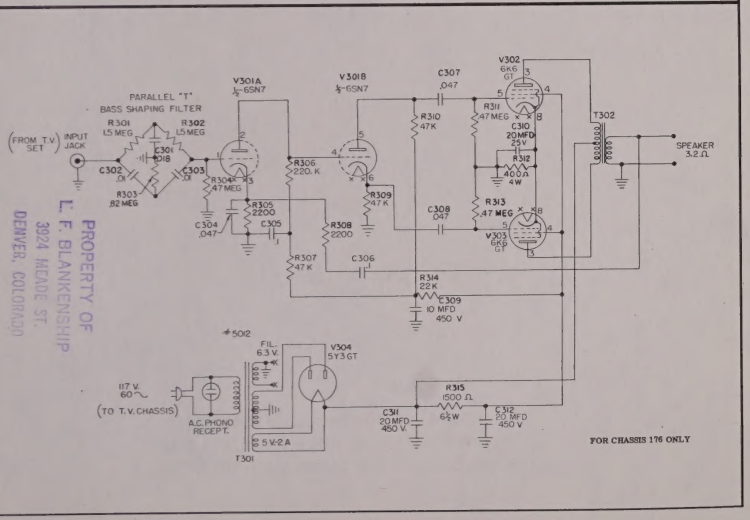

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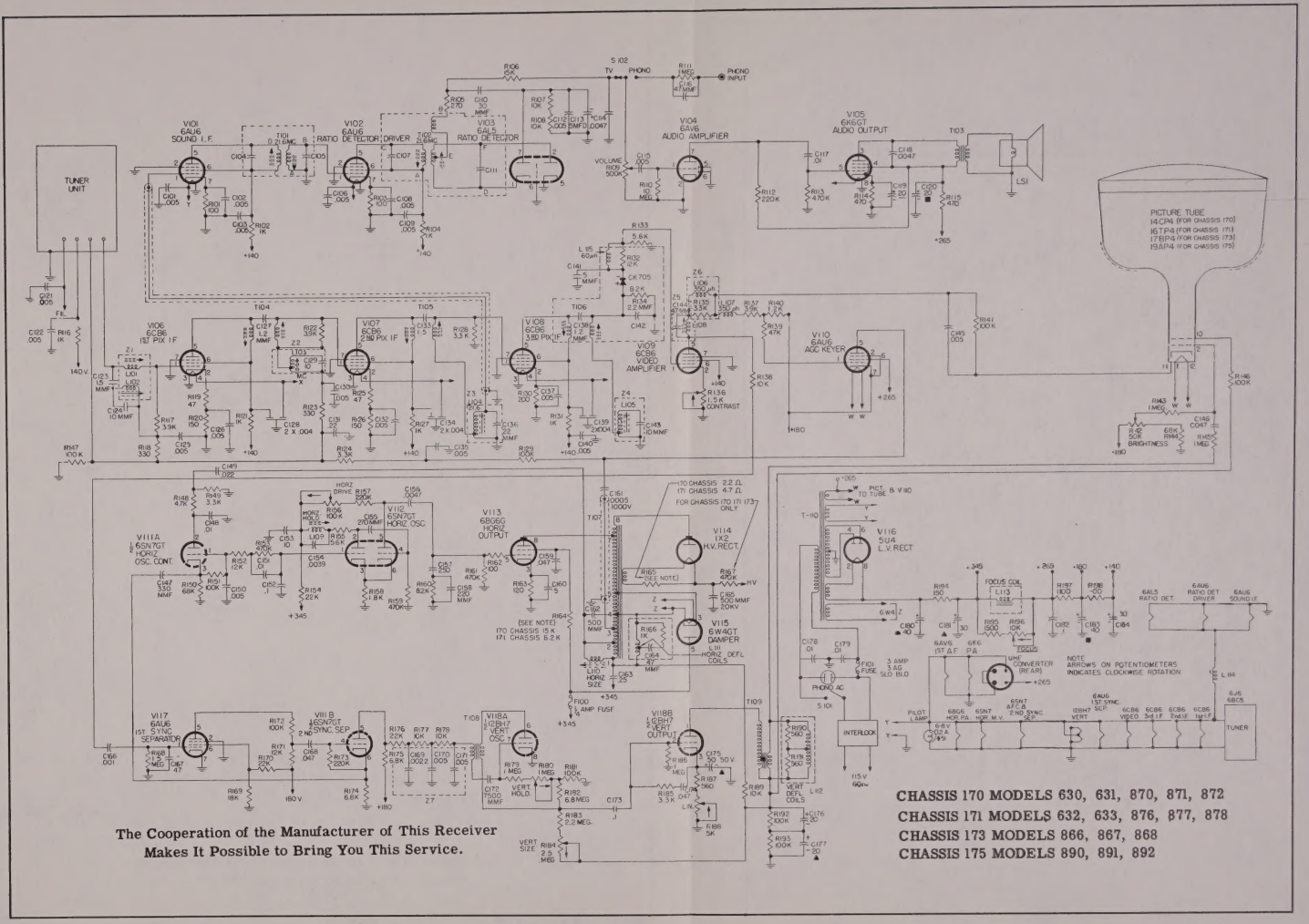

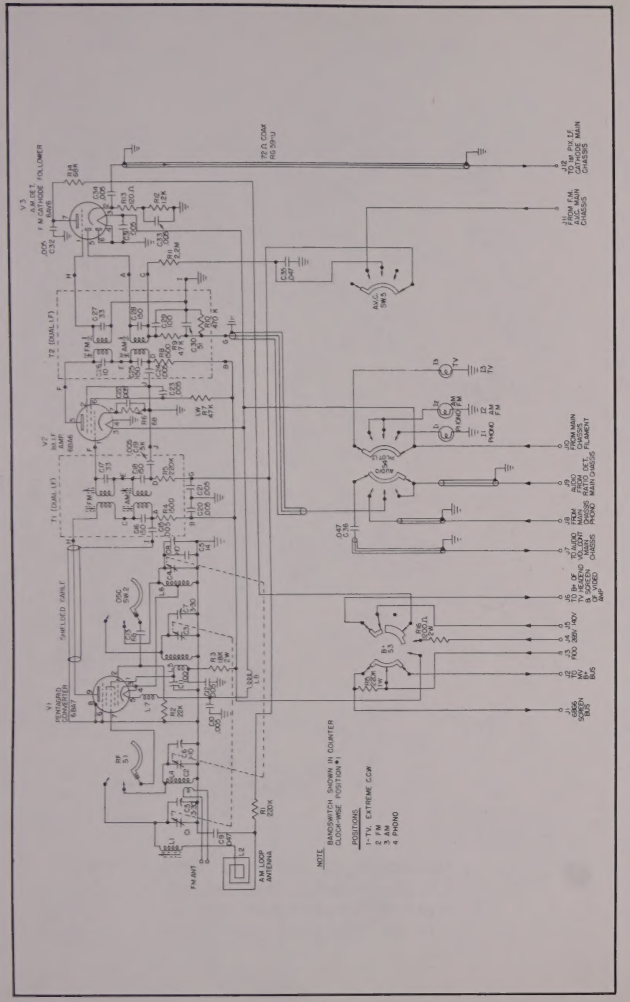

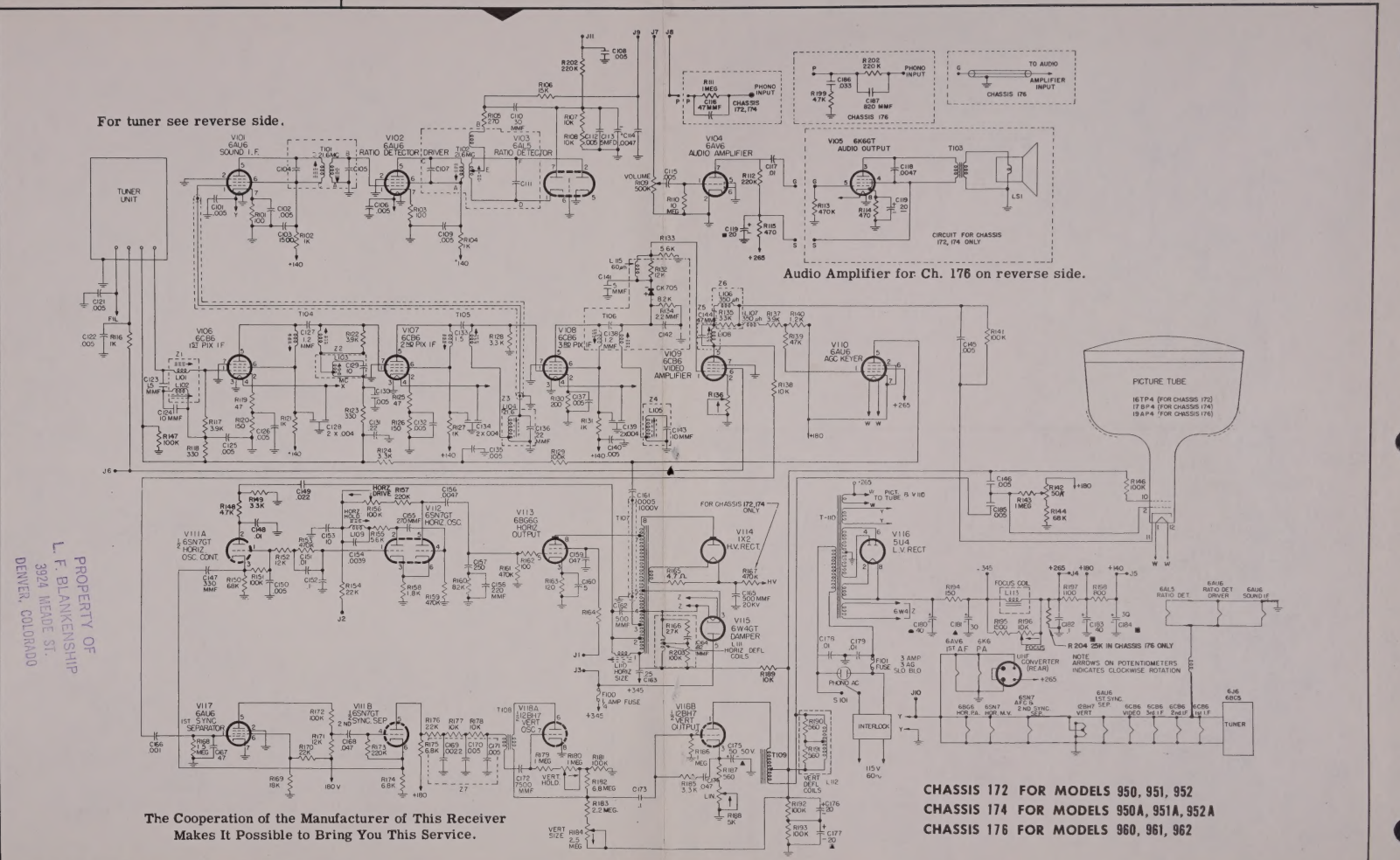

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CHASSIS 172 FOR MODELS 950, 951, 952
CHASSIS 174 FOR MODELS 950A, 951A, 952A
CHASSIS 176 FOR MODELS 960, 961, 962

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SET 117 FOLDER 1A

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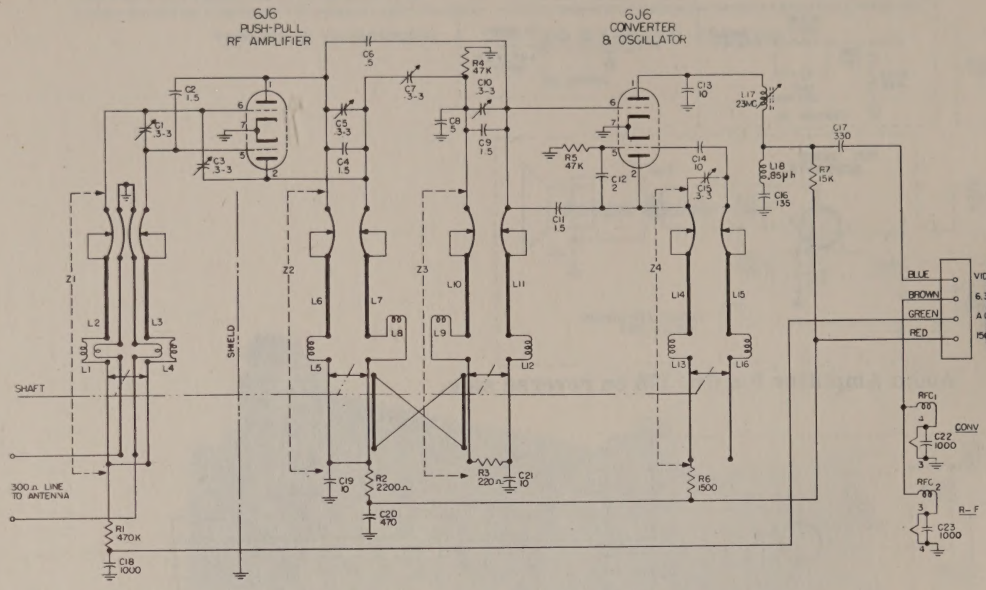

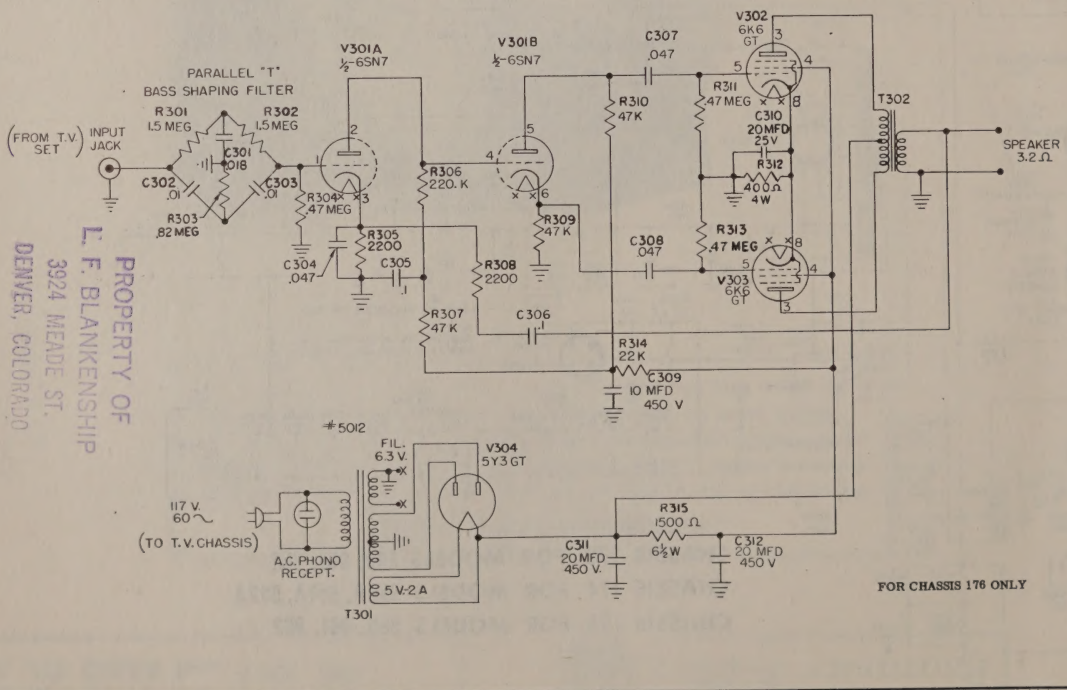

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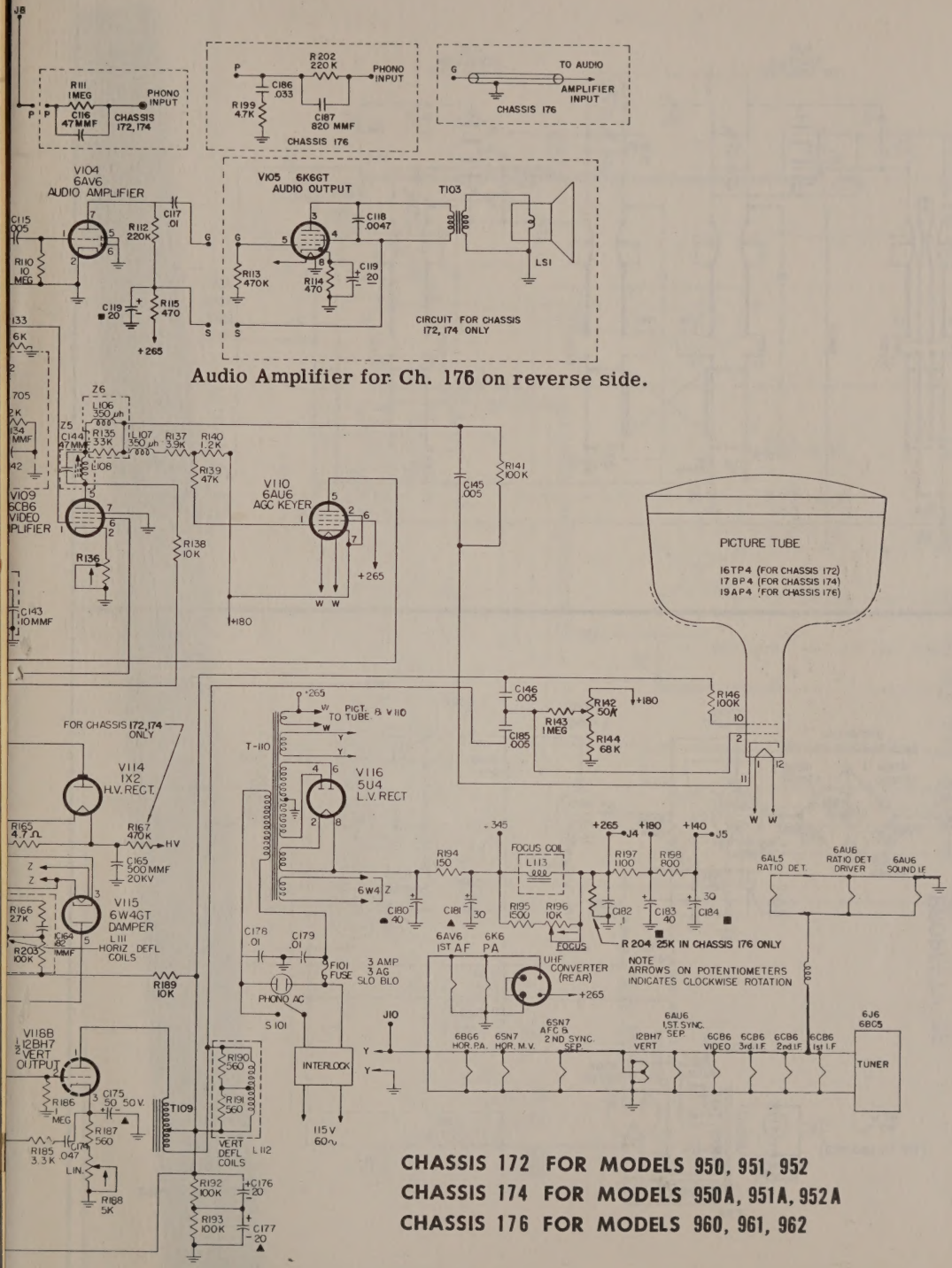

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PHOTOFACT* Folder

*TRADE MARK

ADMIRAL MODELS
14R11, 14R12, 24R11, 24R12
(CH. 20T1), 34R15, A, 34R16, A
(CH. 20V1 and RADIO CH. 3C1)

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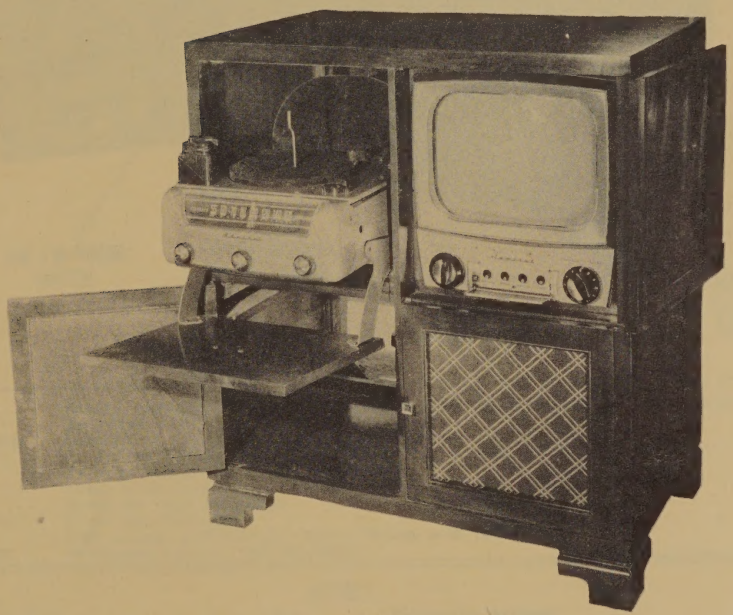

MODEL 34R15A

ADMIRAL MODELS
14R11, 14R12, 24R11, 24R12
(CH. 20T1), 34R15, A, 34R16, A
(CH. 20V1 and RADIO CH. 3C1)

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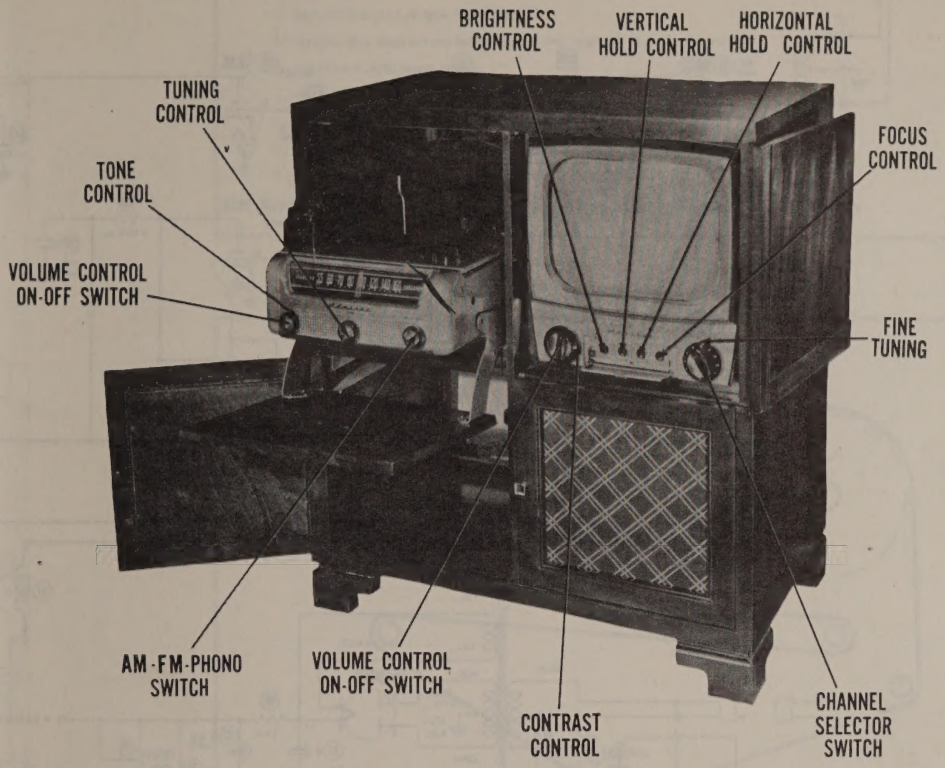

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ADMIRAL CHASSIS
20T1, 20V1 & Radio Ch. 3C1

ADMIRAL MODEL 34R15A

TRADE NAME	Admiral, Models 14R11, 14R12, 24R11, 24R12 (Ch. 20T1), 34R15, A, 34R16, A (TV Chassis 20V1 and Radio Chassis 3C1)
MANUFACTURER	Admiral Corp., 3800 W. Cortland, Chicago 47, Illinois
TYPE SET	TV-AM-Phono Combination Receiver (Models 34R15, A, 34R16, A) TV "Only" (Models 14R11, 14R12, 24R11, 24R12)
TUBES	Twenty Three (Combination Receivers) Twenty (TV "Only" Receivers)
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATINGS	(TV) 1.5 Amp. at 117 Volts AC, (Radio) .78 Amp. at 117 Volts AC
TUNING RANGE	TV Channels 2 thru 13, AM 540-1610KC

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RECORD CHANGER UNIT-ADMIRAL MODEL RC550

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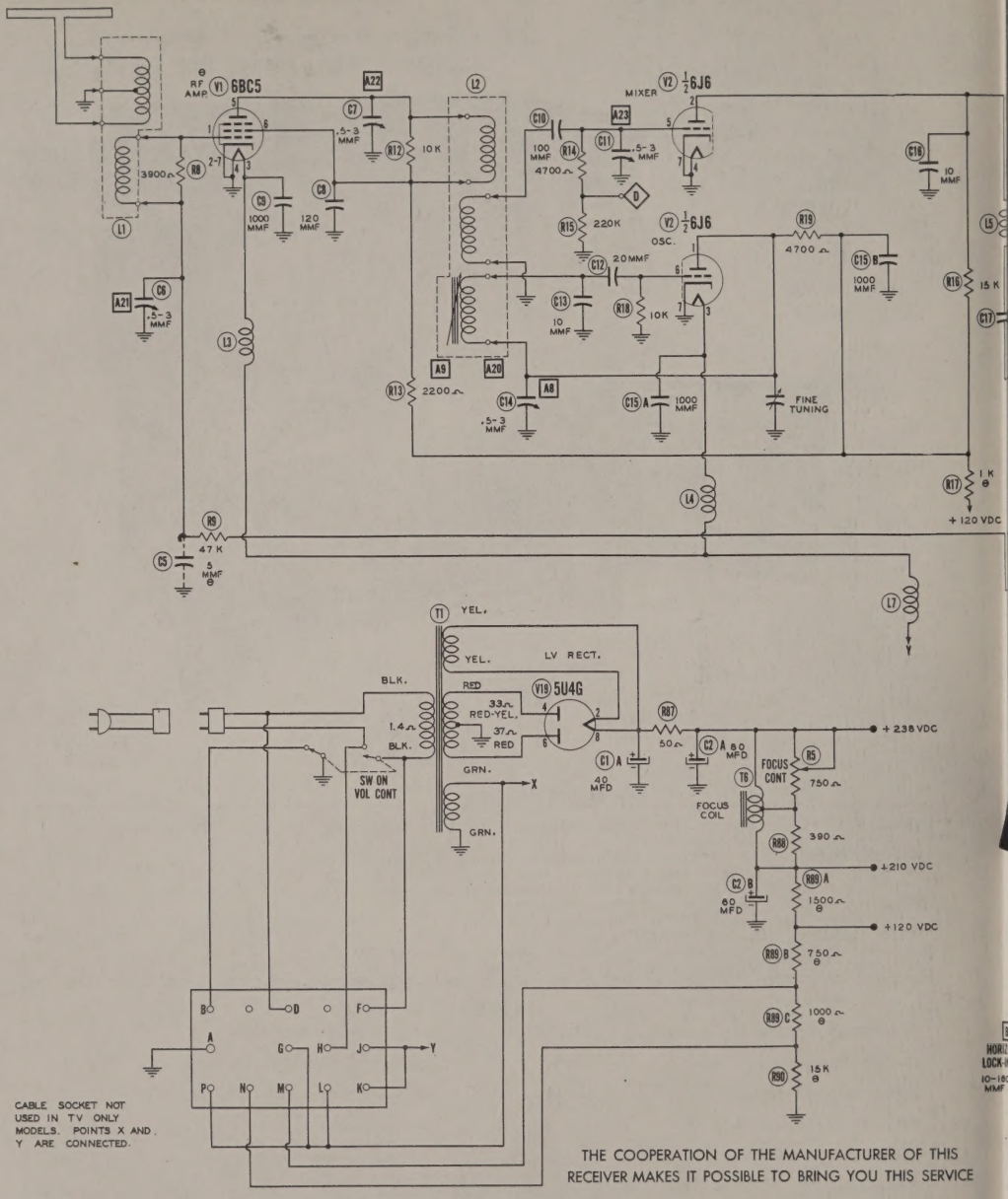

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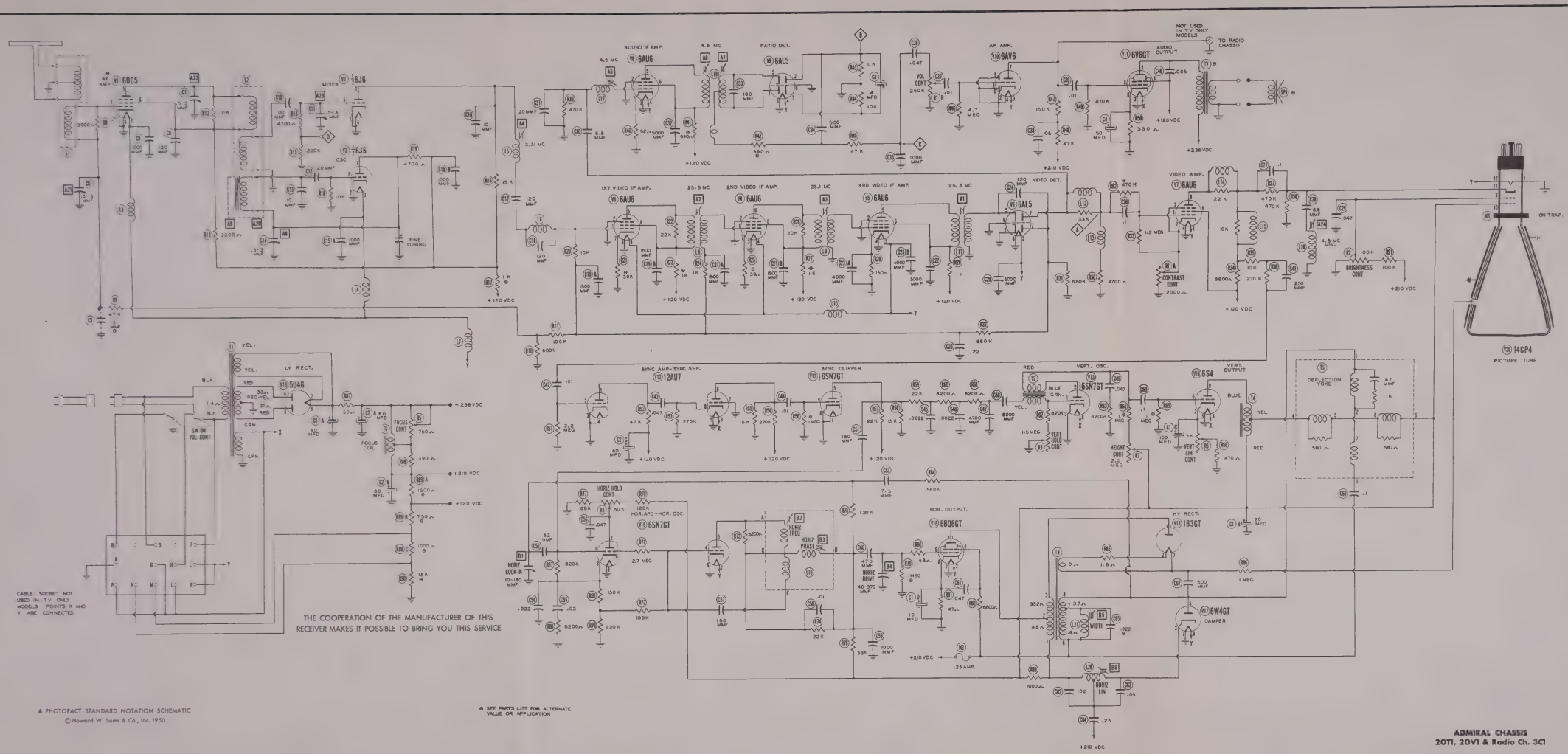
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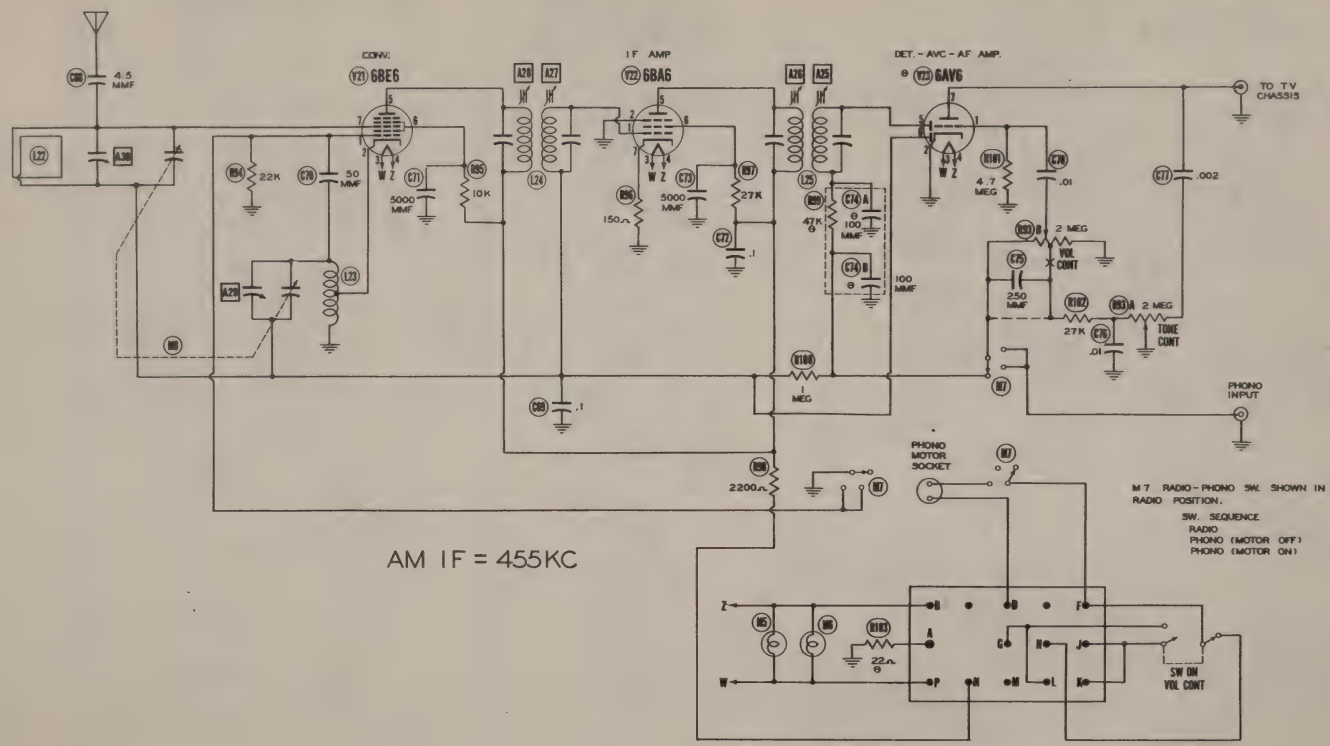
20T1, 20V1 & Radio Ch. 3C1



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V21	6BE6	‡-5.1VDC	0V	6.3VAC	0V	80VDC	50VDC	-.4VDC
V22	6BA6	-.4VDC	0V	6.3VAC	0V	80VDC	55VDC	.6VDC
V23	6AV6	-.8VDC	0V	6.3VAC	0V	-.4VDC	-.4VDC	75VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V21	6BE6	22KΩ	.8Ω	1.3Ω	0Ω	†5.6KΩ	†15KΩ	3 Meg.
V22	6BA6	3 Meg.	0Ω	1.3Ω	0Ω	†5.6KΩ	†32KΩ	150Ω
V23	6AV6	4.7 Meg.	0Ω	1.3Ω	0Ω	2 Meg.	3 Meg.	†170KΩ

‡ TAKEN WITH VACUUM TUBE VOLTMETER RADIO-PHONO SWITCH IN RADIO POSITION † MEASURED FROM PIN 8 OF V19

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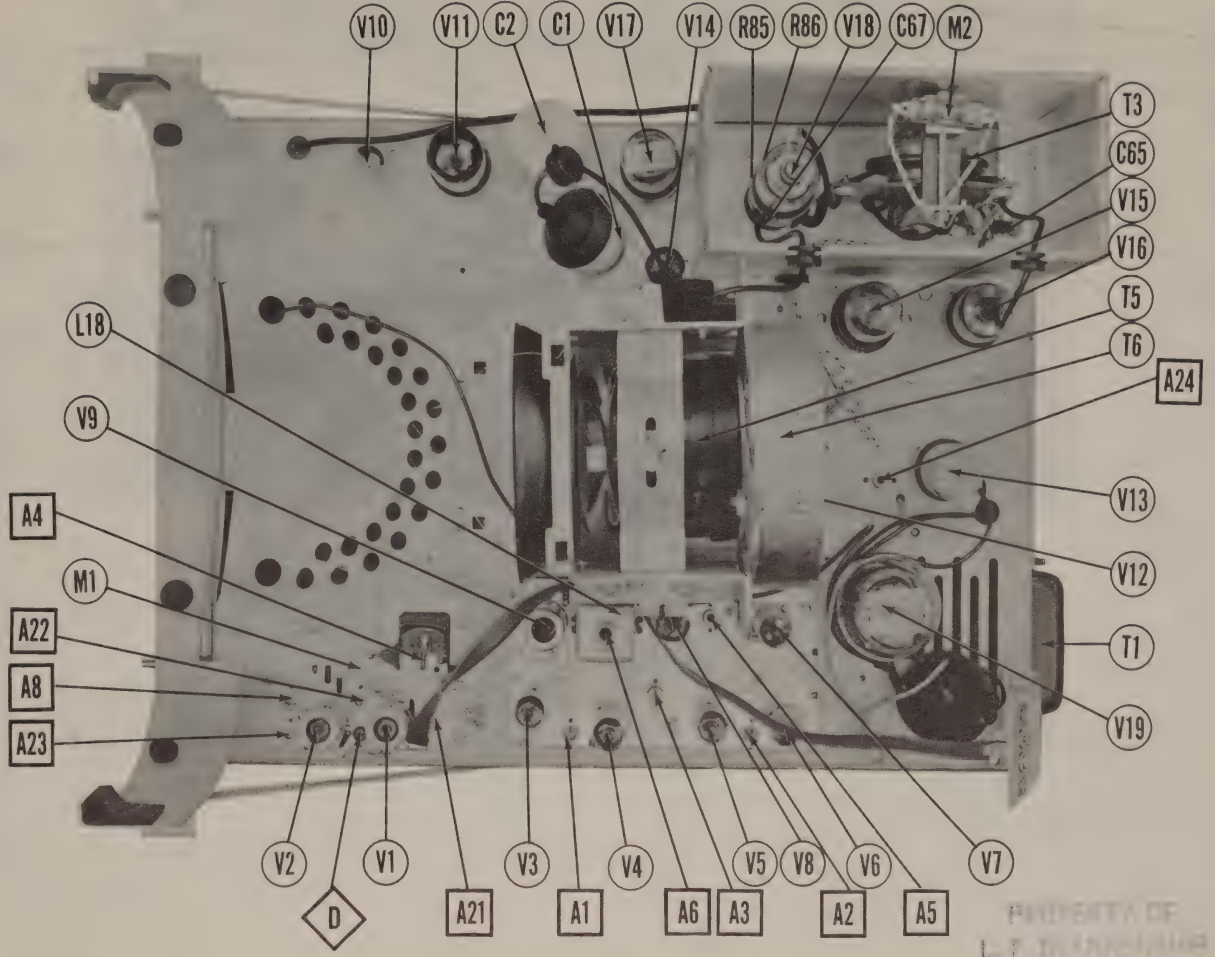
RADIO SCHEMATIC



CHASSIS TOP VIEW

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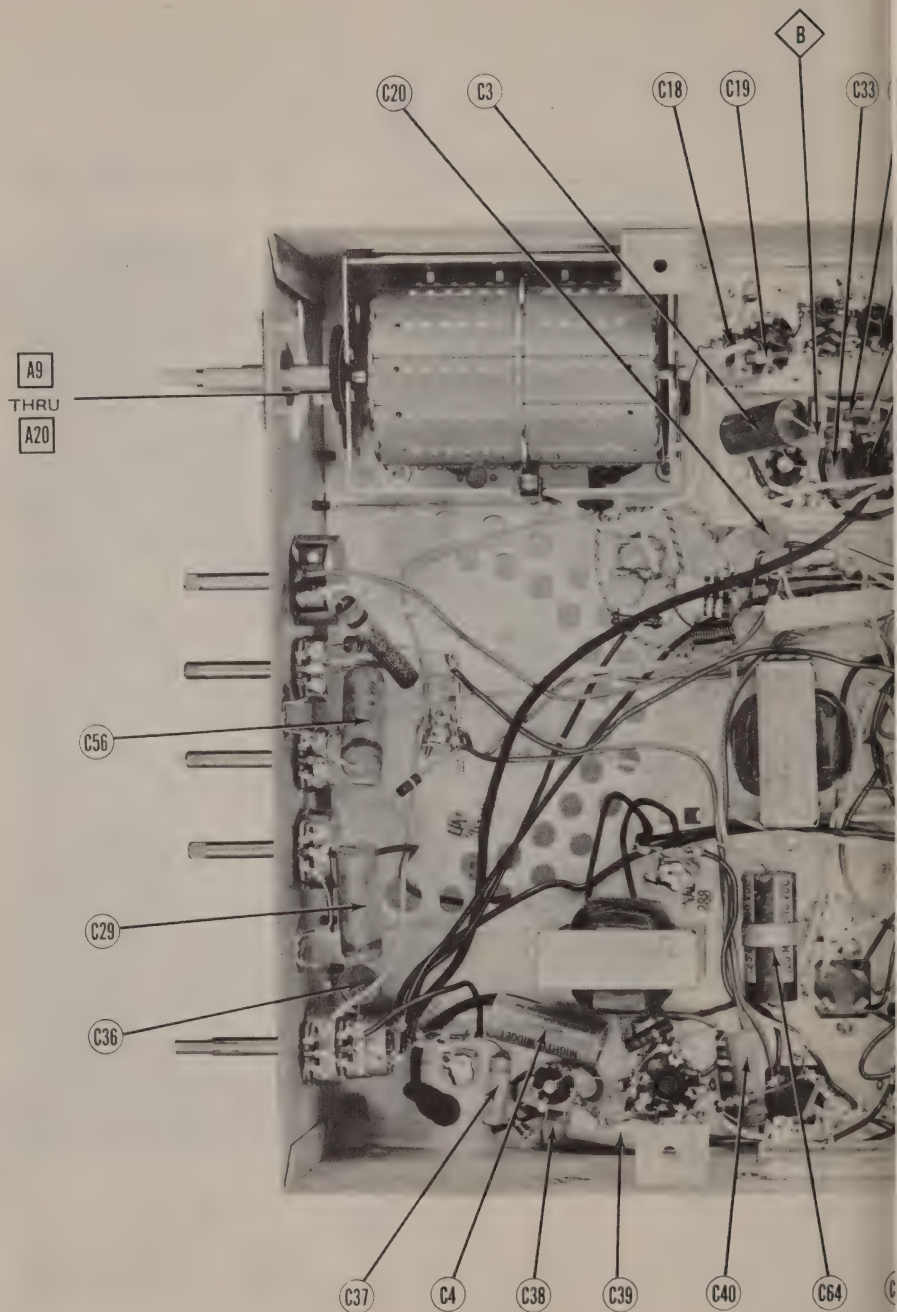
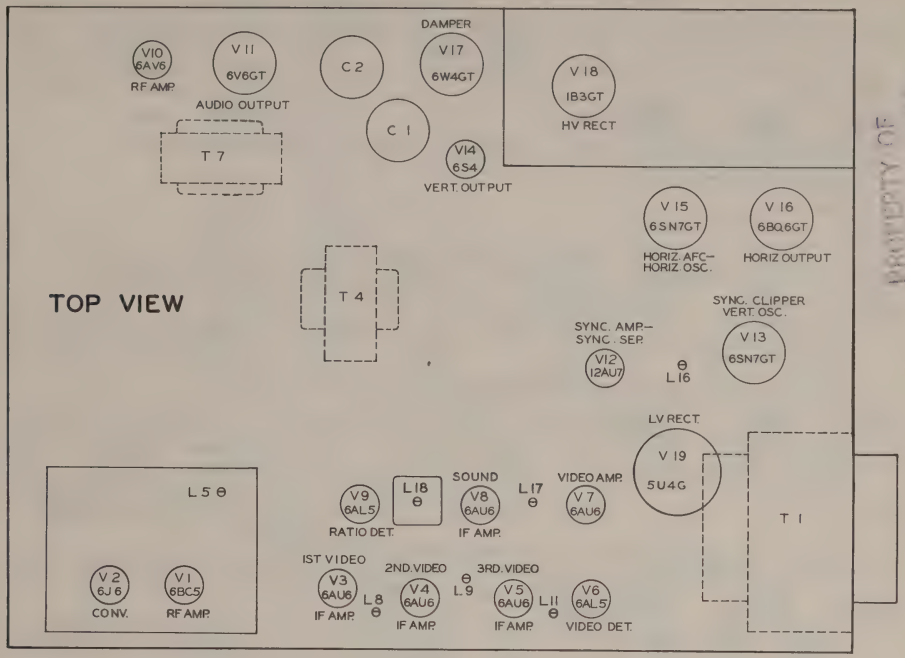
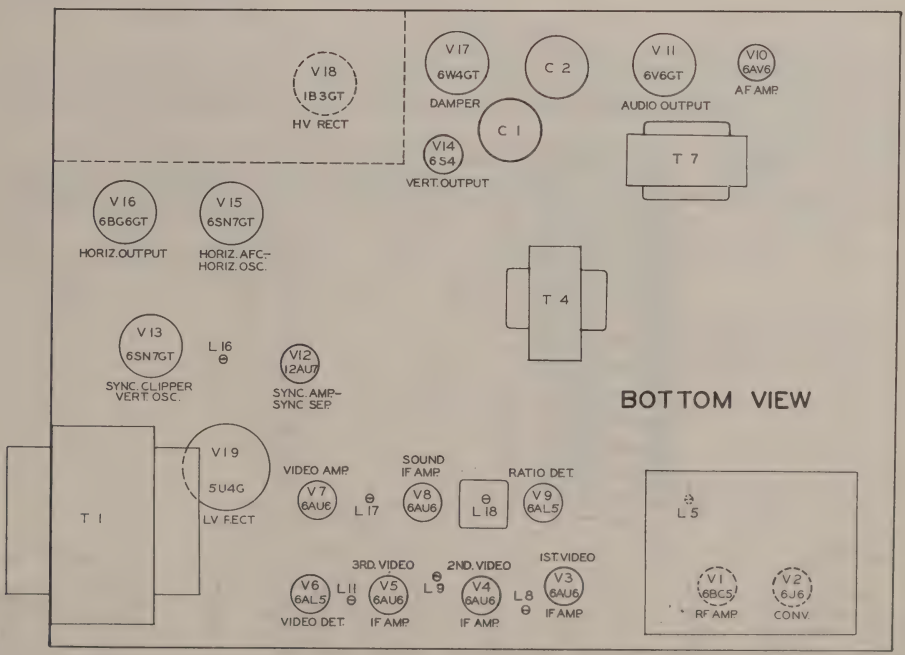


CHASSIS BOTTOM VIEW-CAPACITOR





TUBE PLACEMENT CHART

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If the set is to be aligned with the picture tube removed the end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube, or the horizontal output tube to disable the high voltage. To operate the television chassis on those models having a radio, it will be necessary to short pins L and K on the radio connection socket, if the radio chassis is not connected.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace it with a 6J6 which has pin 1 removed, to eliminate the possibility of erroneous indications from the local oscillator.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	25.3MC (Unmod.)	Any	DC Probe to Point (A). Common to chassis.	A1, A2	Adjust for maximum deflection.
2.	Direct	"	23.1MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscillscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to ungrounded tube shield floating over dummy mixer tube (V2). Low side to chassis.	25MC (10MC SWP)	21.25MC 22 MC 24.3MC 25.75MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response check similar to figure 1 with markers as shown. If necessary retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to alignment Point A . Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (B). Common to chassis.	A5, A6	Adjust for maximum deflection.
5.	.01MFD	"	"	"	DC Probe to Point (C). Common to chassis.	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to alignment Point A . Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A5, A6	Disconnect stabilizer capacitor C3. Adjust for maximum amplitude and symmetry as per figure 2.
5.	.01MFD	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A7	Reconnect capacitor C3. Adjust A7 so 4.5MC occurs at center of crossover lines as per figure 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.

Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A8. It should be noted that this is an all channel, oscillator circuit adjustment, and should not be adjusted for any individual channel. If adjustment of A8 will not bring all channels within the range of the fine tuning control, it will be necessary to adjust the individual channel oscillator adjustment for each channel that is off frequency. The individual channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A9	Adjust to place sound marker at 5% as shown in figure 4. The video marker should be at 50%.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A10	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A11	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A12	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A13	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A14	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A15	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A16	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A17	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A18	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A19	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A20	

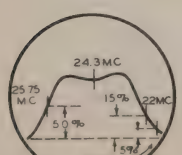


FIG.1

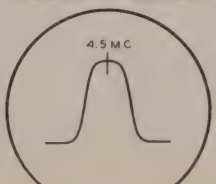


FIG.2

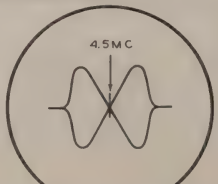


FIG.3

FIG.4

TV ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (B). Low side to chassis.	A21, A22, A23	Adjust for response curve similar to figure 5 with markers above 90%.
8.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Check all channels for response similar to figure 5. If markers fall below 70% on any channel, make slight adjustment of A21, A22 and A23 with channel switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.25MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	81.75MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 54.75MC	2			

4.5MC TRAP ADJUSTMENT

Connect a 15MMFD capacitor between the yellow (cathode) lead from the picture tube, and pin 1 of V8.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.01MFD	High side to Pin 1 (Grid) of 6AU6 (V7). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (B). Common to chassis.	A24	Adjust for MINIMUM deflection.

FIG. 5

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer to last reference mark at low frequency end of dial.
Loop should be maintained in same relative posttion to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
9.	.01MFD	High side to pin 7 (Grid) of 6BE6 (V21). Low side to chassis.	455KC (400 ~ Mod.)		Tuning gang fully open	Across voice coil	A25, A26, A27, A28	Adjust for maximum output.
10.		Loop	1610KC		"	"	A29	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
11.		Loop	1400KC		Tune for max. output	"	A30	"

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	-.4VDC	0V.	6.3VAC	0V.	90VDC	90VDC	0V.		
V 2	6J6	65VDC	45VDC	6.3VAC	0V.	-1.5VDC	§-3.4VDC	0V.		
V 3	6AU6	-.4VDC	0V.	0V.	6.3VAC	120VDC	120VDC	.5VDC		
V 4	6AU6	-.4VDC	0V.	0V.	6.3VAC	120VDC	120VDC	.6VDC		
V 5	6AU6	0V.	0V.	6.3VAC	0V.	115VDC	115VDC	1.3VDC		
V 6	6AL5	0V.	.6VDC	6.3VAC	0V.	0V.	0V.	-.6VDC		
V 7	6AU6	.4VDC	.7VDC	6.3VAC	0V.	110VDC	120VDC	.7VDC		
V 8	6AU6	0V.	0V.	0V.	6.3VAC	115VDC	115VDC	.7VDC		
V 9	6AL5	.1VDC	-.1VDC	0V.	6.3VAC	0V.	0V.	0V.		
V 10	6AV6	-.7VDC	0V.	6.3VAC	0V.	0V.	0V.	95VDC		
V 11	6V6GT	0V.	0V.	235VDC	120VDC	0V.	175VDC	6.3VAC	6VDC	
V 12	12AU7	33VDC	-.7VDC	0V.	0V.	0V.	5.7VDC	0V.	1.2VDC	6.3VAC
V 13	6SN7GT	-16VDC	165VDC 80VDC	0V.	-.6VDC	37VDC	0V.	0V.	6.3VAC	
V 14	6S4	0V.	25VDC 8VDC	0V.	6.3VAC	0V.	0V.	0V.	0V.	315VDC
V 15	6SN7GT	-3.8VDC	100VDC	-22VDC	-60VDC	235VDC	0V.	6.3VAC	0V.	
V 16	6BQ6GT	0V.	6.3VAC	0V.	140VDC	-8.6VDC	220VDC	0V.	5.5VDC	TOP CAP *
V 17	6W4GT	0V.	6.3VAC	320VDC	320VDC	220VDC	310VDC	0V.	6.3VAC	
V 18	1B3GT	* DO NOT MEASURE.								
V 19	5U4G	0V.	240VDC	0V.	275VAC	0V.	275VAC	0V.	240VDC	
V 20	14CP4	0V.	0V.	PIN 10 310VDC	PIN 11 50VDC	PIN 12 6.3VAC				

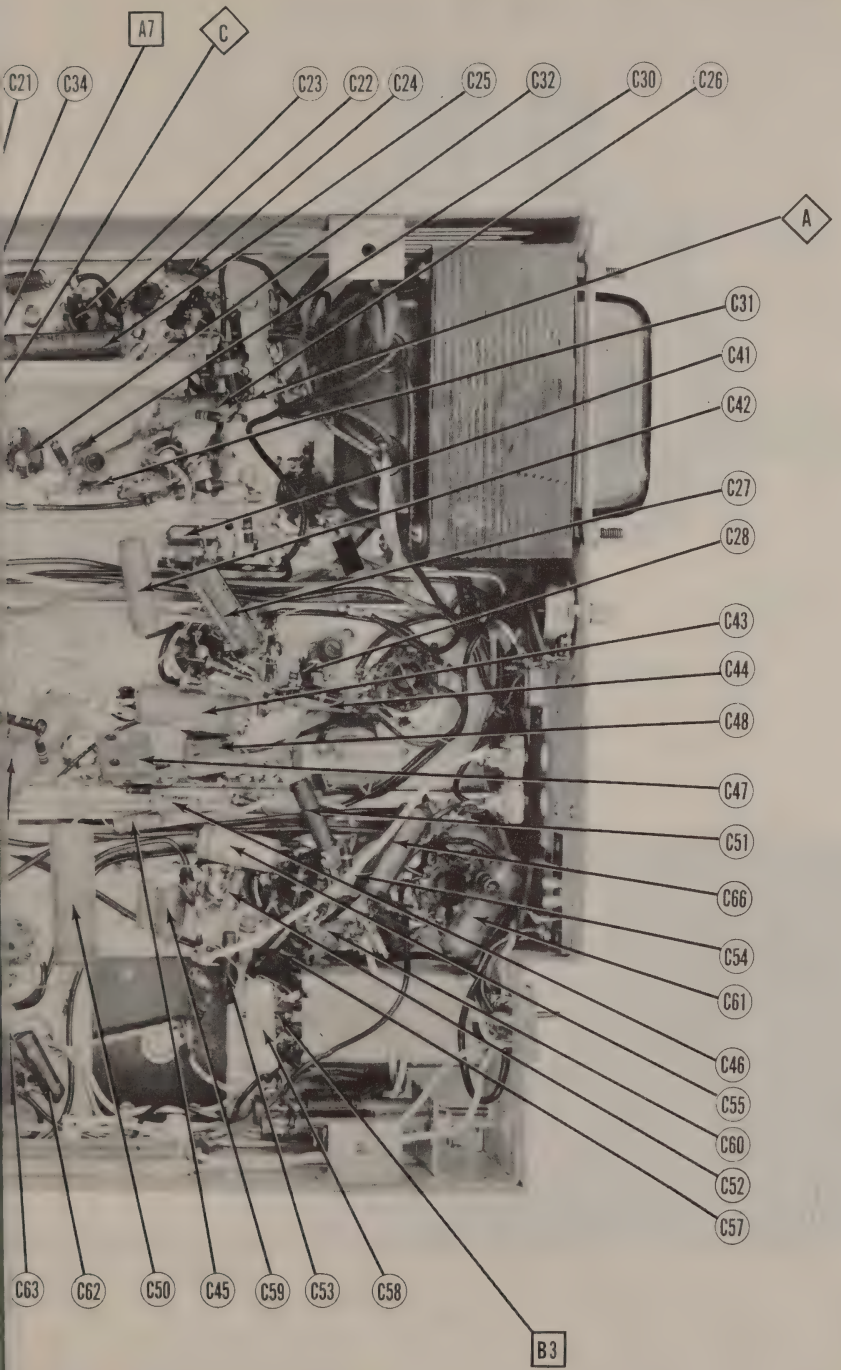
§ TAKEN WITH VACUUM TUBE VOLTMETER.
* DO NOT MEASURE.

RESISTANCE READINGS

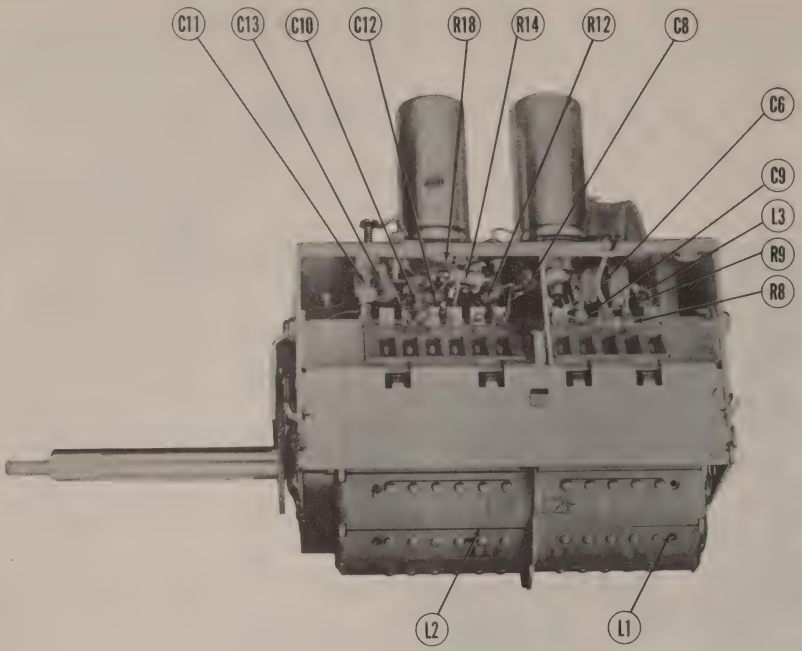
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	600KΩ	0Ω	.1Ω	0Ω	†4.8KΩ	†4.8KΩ	0Ω		
V 2	6J6	†9.3KΩ	†18KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6AU6	600KΩ	0Ω	0Ω	.1Ω	†2.3KΩ	†2.3KΩ	39Ω		
V 4	6AU6	600KΩ	0Ω	0Ω	.1Ω	†2.2KΩ	†2.2KΩ	39Ω		
V 5	6AU6	.5Ω	0Ω	.1Ω	0Ω	†2.6KΩ	†2.6KΩ	150Ω		
V 6	6AL5	0Ω	4.7KΩ	.1Ω	0Ω	.5Ω	0Ω	450KΩ		
V 7	6AU6	375KΩ	2KΩ	.1Ω	0Ω	†7.2KΩ	†1.6KΩ	2KΩ		
V 8	6AU6	470KΩ	0Ω	0Ω	.1Ω	†2.6KΩ	†2.6KΩ	82Ω		
V 9	6AL5	10KΩ	10KΩ	0Ω	.1Ω	Inf.	0Ω	Inf.		
V 10	6AV6	4.7 Meg.	0Ω	.1Ω	0Ω	0Ω	0Ω	†170KΩ		
V 11	6V6GT	Inf.	0Ω	†320Ω	†1.6KΩ	470KΩ	†5IKΩ	.1Ω	330Ω	
V 12	12AU7	†52KΩ	2.2 Meg.	0Ω	0Ω	0Ω	15KΩ	0Ω	270KΩ	.1Ω
V 13	6SN7GT	2.3 Meg.	#1 Meg. #3.5 Meg.	0Ω	950KΩ	†14KΩ	0Ω	0Ω	.1Ω	
V 14	6S4	Inf.	3.5KΩ 470Ω	1 Meg.	.1Ω	0Ω	1 Meg.	Inf.	Inf.	#2.5KΩ
V 15	6SN7GT	1 Meg.	#140KΩ	340KΩ	310KΩ	#30KΩ	0Ω	.1Ω	0Ω	
V 16	6BQ6GT	Inf.	.1Ω	Inf.	†6.9KΩ	950KΩ	†160Ω	0Ω	47Ω	TOP CAP #55Ω
V 17	6W4GT	Inf.	.1Ω	80KΩ	#10Ω	†170Ω	#4.3Ω	0Ω	.1Ω	
V 18	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #405Ω
V 19	5U4G	Inf.	10KΩ	Inf.	35Ω	Inf.	35Ω	Inf.	10KΩ	
V 20	14CP4	0Ω	0Ω	PIN 10 #1000Ω	PIN 11 270KΩ	PIN 12 .1Ω				

† MEASURED FROM PIN 8 OF V19.
# MEASURED FROM PIN 3 OF V17.

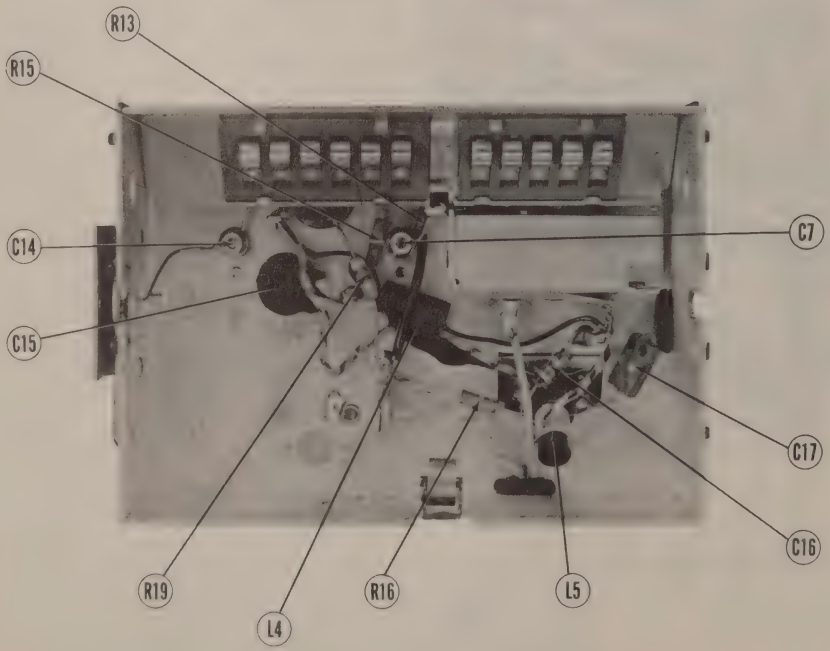
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



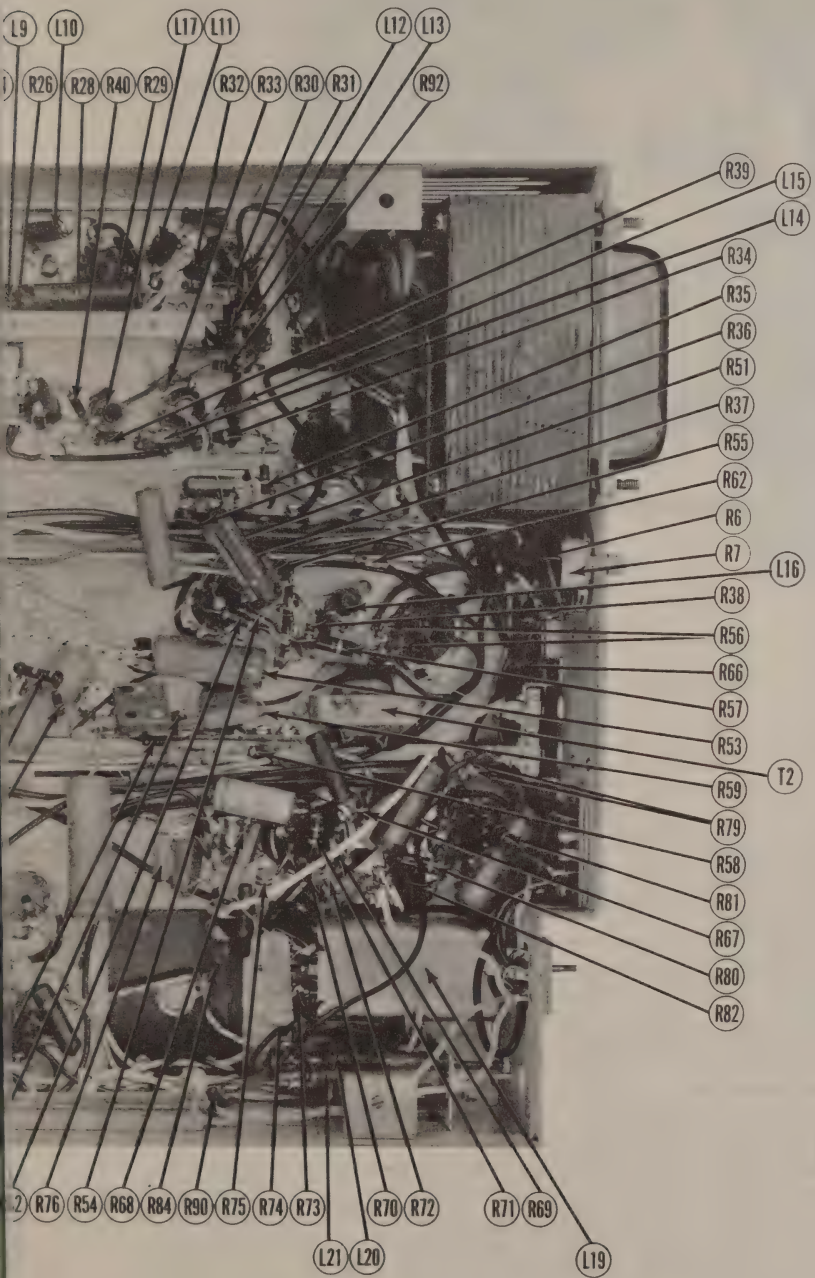
ND ALIGNMENT IDENTIFICATION



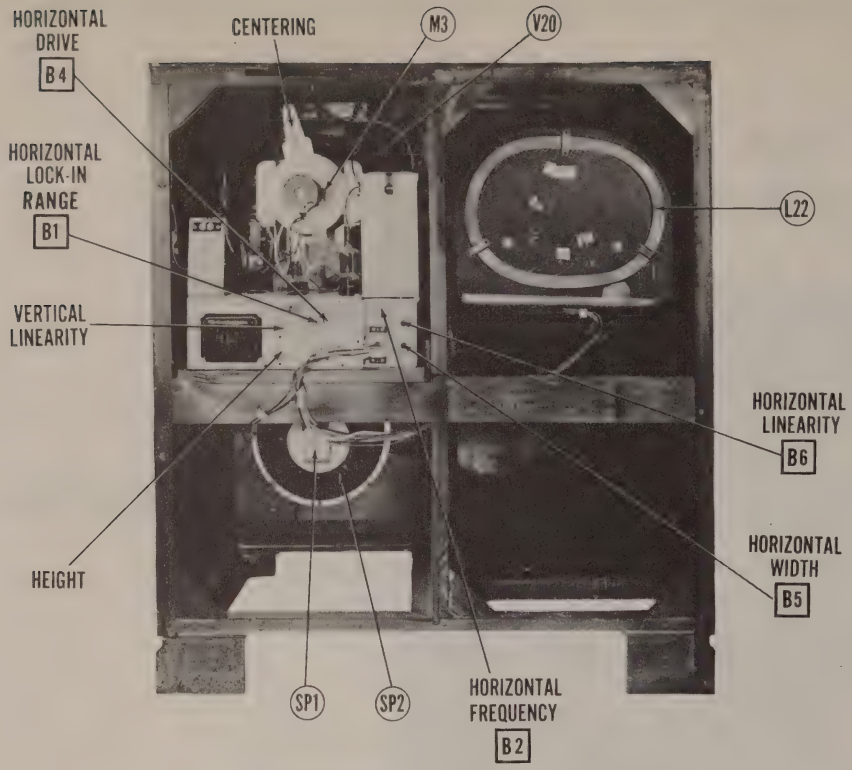
RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



ND INDUCTOR IDENTIFICATION



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ALIGNMENT

Turn the set on and tune in a TV station, preferably a test pattern.
If the picture cannot be synchronized horizontally with the horizontal hold control, pre-set the adjustments as follows:
Horizontal lock (B3) one fourth of its range in from fully out.
Horizontal lock in trimmer (B1) one third turn out from fully in.
Horizontal frequency slug (B2) ten turns in from fully out.
Connect a low capacity probe of an oscilloscope to terminal "C" of the horizontal oscillator coil (L19).
Turn the horizontal hold control to the mid-position of its range.
Adjust B2 until the picture synchronizes horizontally.
Adjust B3 until the broad and narrow peaks of the pattern on the oscilloscope are of equal height as shown in figure 6. If necessary, adjust B2 to keep the picture synchronized while making this adjustment.
Disconnect the oscilloscope and turn the hold control to maximum counter clockwise.
Adjust B1 until 6 to 10 diagonal bars, sloping downward to the right appear on the screen.
Turn the horizontal hold control to maximum clockwise. The picture should synchronize. If the picture does not synchronize, repeat the horizontal lock-in adjustment (B1) as outlined above.
Turn the horizontal hold control to fully clockwise and adjust B2 counter-clockwise until the picture falls out of "sync", and then slowly clockwise until the picture just falls into "sync". If bending occurs at the top of the picture, turn B2 clockwise until the bending just disappears.
If bending is excessive and cannot be removed by adjusting B2, reconnect the oscilloscope and adjust B2 until the rounded peak of the waveform (figure 6) is 10 to 20 pre cent higher than the sharp peak, this will compensate the loading effect of the oscilloscope.

HORIZONTAL WIDTH AND LINEARITY ADJUSTMENTS

Adjust the horizontal drive trimmer (B4) to 1/2 turn out from fully in.
Adjust the width slug (B5) until the proper size picture is obtained horizontally. Do not use the horizontal drive trimmer (B4) to adjust picture width.
Adjust the horizontal linearity slug (B6) until the picture is symmetrical from left to right.
If necessary, slightly retouch B4 for optimum symmetry.
If B4 is changed check to make sure that the picture will remain in horizontal synchronization for at least one half rotation of the hold control.

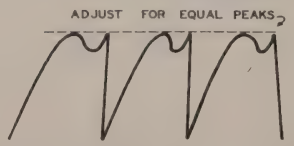


FIG. 6

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6BC5	6BC5	7BD	
B	RF Amplifier	6CB6	6CB6	6CK	
C	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd Video IF Amp.	6AU6	6AU6	7BK	
V6	Video Det.	6AL5	6AL5	6BT	
V7	Video Amp.	6AU6	6AU6	7BK	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Det.	6AL5	6AL5	6BT	
V10	AF Amp.	6AU6	6AU6	7BK	
V11	Audio Output	6V6GT	6V6GT	7AC	
V12	Sync. Amp. - Sep.	12AU7	12AU7	9A	
V13	Sync. Clipper - Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V14	Vert. Output	6S4	6S4	9AC	
V15	Hor. AFC - Osc.	6SN7GT	6SN7GT	8BD	
V16	Hor. Output	6BQ6GT	6BQ6GT	6A M	
V17	Damper	6W4GT	6W4GT	4CG	
V18	H. V. Rect.	1B3GT	1B3GT	3C	
V19	L. V. Rect.	5U4G	5U4G	5T	
V20	Picture Tube	14CP4	14CP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	350	67C15-16	AF842J20B					■ Filter
B	20	400							▲ Decoupling
C	100	50							▲ Vert. Output Cathode
D	10	50							Hor. Output Cathode
C2A	80	350	67C15-15	AFH161212H					▲ Filter
B	60	350							■ Filter
C	60	350							▲ Decoupling
C3	4	50	67A4-9	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C4	50	25	67A4-10	PRS25/50		BR502A		TVA-1206	Output Cath. Bypass
C5	5		98A45-22	SI5NPO	TCZ-4.7		NPOK-5		Fixed Trimmer*
C6	.5-3		98A45-87		829-3				Variable Trimmer
C7	.5-3		98A45-23		829-3				Variable Trimmer
C8	120		98A45-25	SI120	D6-121		GP2K-120	19C29	RF Amp. Decoupling
C9	1000		98A45-24	SI1000	D6-102		GP2L-001	19C1	RF Amp. Fil.
C10	100		98A45-26	SI100	D6-101		GP1K-100	19C11	RF Coupling
C11	.5-3		98A45-23		829-3				Variable Trimmer
C12	20		98A45-27	SI20NPO	TCZ-20		NPOK-20		Osc. Grid Cap.
C13	10		98A45-79	SI10N750	TCN-10		N750-10	19C4	Fixed Trimmer
C14	.5-3		98A45-23		829-3				Variable Trimmer
C15A	1000		98A45-93	BPD-2x001	DD-2-10		882-2x0015	29C7	Conv. Fil. Bypass
B	1000								RF Bypass
C16	10		98A45-64	SI10NPO	TCZ-10		NPOK-10	19C3	Fixed Trimmer
C17	120	500	98A45-78	SI120	D6-121		GP2K-120	19C29	IF Coupling
C18	120	500	65B1-10		TCZ-120		NPOM-120		Fixed Trimmer
C19A	1500		65A17-2	BPD-2x0015	DD-2-152	1W5D15	882-2x0015	29C6	AGC Filter
B	1500					1W5D15			1st Video IF Decoup.
C20	5000		65A10-1	BPD-005	DD-502	1D5D5	811-005	29C1	Filament Bypass
C21A	1500		65A17-2	BPD-2x0015	DD-2-152	1W5D15	882-2x0015	29C6	AGC Filter
B	1500					1W5D15			2nd Video IF Decoup.
C22	5000		65A10-1	BPD-005	DD-502	1D5D5	811-005	29C1	3rd Video IF Decoup.
C23A	4000			BPD-2x004	DD-2-502	1D5D4	882-2x004	36C2	3rd Video IF Cath.
B	4000					1D5D4			3rd Video IF Fil.
C24	120		65B1-10	SI120	D6-121	5W5T15	GP2K-120	19C29	IF Coupling
C25	.22	200	64B9-37	P488-22		GT2P25		2TM-P22	AGC Filter
C26	.1	200	64B9-39	P288-1	DF-104	PTE4P1		2TM-P1	Video Coupling
C27	.1	400	64B9-36	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C28	6.8		65B6-71	SI6.8NPO	TCZ-6.8		NPOK-6.8		Fixed Trimmer
C29	.047	600	64B9-9	P688-047	DF-503	PTE6S5		6TM-S47	Pic. Tube Grid
C30	6.8		65B6-71	SI6.8NPO	TCZ-6.8		NPOK-6.8		Sound IF Coupling
C31	20		65B6-51	SI20NPO	TCZ-20		NPOK-20		Voltage Divider
C32	5000		65A10-1	BPD-005	DD-502	1D5D5	811-005	29C1	Sound IF Decoupling
C33	180		65B6-59				N030L-180		Fixed Trimmer
C34	500		65B6-6	SI500	D6-501	5W5T5	GP2K-500	19C32	Diode Load Cap.
C35	1000		65B6-41	SI1000	D6-102	1W5D1	GP2L-001	19C1	De-emphasis
C36	.047	600	64B9-9	P688-047	DF-503	PTE6S5		6TM-S47	Audio Coupling
C37	.01	600	64B9-13	P688-01	D6-103	PTE6S1	811-01	6TM-S1	Audio Coupling
C38	.05	600	64B9-9	P688-05	DF-503	PTE6S5		6TM-S5	AF Amp. Decoupling
C39	.01	600	64B9-13	P688-01	D6-103	PTE6S1	811-01	6TM-S1	Audio Coupling
C40	.005	600	64B9-15	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Output Plate Bypass
C41	250	500	65B6-5	1468-00025	D6-251	5W5T25	GP2K-250	1FM-325	Sync. Coupling
C42	.01	600	64B9-13	P688-01	D6-103	PTE6S1	811-01	6TM-S1	Sync. Coupling
C43	.047	600	64B9-9	P688-047	DF-503	PTE6S5		6TM-S47	Sync. Coupling
C44	.01	600	64B9-13	P688-01	D6-103	PTE6S1	811-01	6TM-S1	Sync. Coupling
C45	.0022	600	64B5-14	P688-0022	D6-222	PTE6D2	GP2M-0022	6TM-D22	Integrator Network
C46	.0022	600	64B5-14	P688-0022	D6-222	PTE6D2	GP2M-0022	6TM-D22	Integrator Network
C47	4700	500	65B21-472	P688-0047	D6-472	1D5D5	GP2M-0047	6TM-D47	Integrator Network
C48	6000	500	65B5-45	1467-006	D6-562	1D5D6		1FM-26	Vert. Osc. Grid
C49	.047	600	64B9-9	P688-047		PTE6S5		6TM-S47	Vert. Discharge
C50	.1	600	64B9-7	P688-1	DF-104	PTE6P1		6TM-P1	Vert, Sweep Coupling
C51	180		65B6-59	SI180	D6-181	5W5T2	GP2K-180	1FM-32	Hor. Sync. Coupling
C52	82	500	65B21-820	1468-0001	TCZ-82	5W5T1	GP1K-82	1FM-31	Hor. Sync. Coupling
C53	7.5	1500	65A23-3						Hor. Feedback
C54	.022	200	64B9-11	P488-022	DF-203	PTE4S2		4TM-S22	AFC Filter
C55	.2	200	64B9-37	P488-22		GT4P2		2TM-P22	AFC Filter
C56	.047	600	64B9-9	P688-047	DF-503	PTE6S5		6TM-S47	Hor. AFC Plate
C57	180		65B6-59	SI180	D6-181	5W5T2	GP2K-180	1FM-32	Hor. Osc. Grid
C58	.01	600	65A13-3	P688-01		PTE6S1		6TM-S1	Fixed Trimmer
C59	1000	500	65B21-102	1464-001		1R5D1		MS-21	Hor. Discharge
C60	470	500	65B1-57	1468-0005	D6-471	5W5T5	GP2K-470	1FM-35	Hor. Sweep Coupling

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C61	.047	600	64B9-9	P688-047	DF-503	PTE6S5		6TM-S5	Hor. Output Screen
C62	.02	400	64A2-9	P488-02		PTE4S2		4TM-S2	Damper Filter
C63	.05	200	64A2-8	P288-05		PTE4S5		2TM-S5	Damper Filter
C64	.25	600	64B9-55	684-25		GT6P25		6TM-P25	Damper Filter
C65	.022	600	64B5-24	P688-022		PTE6S2		6TM-S22	Fixed Trimmer †
C66	.1	400	64A2-10	P488-1	DF-104	PTE4P1		4TM-P1	Hor. Sweep Coupling
C67	500	20000	65B18-5	HV20C	TV3-502				H. V. Filter

* Not used in all models.
† Items C65 was added in run 1.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	2000Ω	½	75B11-15		RTV-47	SBB-519-S	Contrast control-front
B	250KΩ	½					Volume control and switch-rear
R2A	100KΩ	½	75B13-11	Q11-128	AM-49-S	AN-40	Brightness control
B	Shaft		Not Req.	Not Req.	RS-2	AK-4	Attach to R2A per instructions
R3A	1.5 Meg.	½	75B13-8	Q11-138	AG-83-S	B-75	Vertical hold control
B	Shaft		Not Req.	Not Req.	KS5-3	Not Req.	Attach to R3A per instructions
R4A	50KΩ	½	75B13-9	Q11-123	AG-44-S	B-31	Horiz. hold control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R4A per instructions
R5	750Ω	2	75B13-17	W-750	43-750	V-128	Focus control-Wire Wound
R6A	3000Ω	½	75B13-7	Q11-112	AM-15-S	B-8	Vert. linearity control
B	Shaft		Not Req.		FKS-1/4	Not Req.	Attach to R6A per instructions
R7A	2.5 Meg.	½	75B13-3	Q11-239	AM-84-S	AN-83	Height control
B	Shaft		Not Req.		FKS-1/4	AK-1	Attach to R7A per instructions

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ADMIRAL PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R8	3900Ω	½	98A45-16	BTS-3900	Antenna Coil Shunt
R9	47KΩ 20%	½	98A45-17	BTS-47K	AGC Network
R10	680KΩ 20%	½	60B8-684	BTS-680K	AGC Network
R11	100KΩ	½	60B8-104	BTS-100K	AGC Network
R12	10KΩ 20%	½	60B7-103	BTS-10K	RF Plate Coil Shunt
R13	2200Ω 20%	½	98A45-19	BTS-2200	RF Plate Decoupling
R14	4700Ω	½	98A45-20	BTS-4700	RF Mixer Grid
R15	220KΩ 20%	½	60B8-224	BTS-220K	RF Mixer Grid
R16	15KΩ 20%	½	60B8-153	BTS-15K	RF Mixer Plate
R17	1000Ω	½	60B8-102	BTS-1000	Voltage Divider-See Note 1
R18	10KΩ	½	60B7-103	BTS-10K	RF Osc. Grid
R19	4700Ω	½	98A45-20	BTS-4700	RF Osc. Plate
R20	10KΩ 20%	½	60B7-103	BTS-10K	1st Video IF A mp. Grid
R21	39Ω	½			1st Video IF Amp. Cathode-See Note 3
R22	22KΩ	½	60B8-223	BTS-22K	2nd Video IF Transformer Shunt
R23	1000Ω	½	60B8-102	BTS-1000	1st Video IF Amp. Decoupling-See Note 2
R24	1000Ω	½	60B8-102	BTS-1000	AGC Network
R25	39Ω	½			2nd Video IF Amp. Cathode-See Note 4
R26	10KΩ	½	60B7-103	BTS-10K	3rd Video IF Transformer Shunt
R27	1000Ω	½	60B8-102	BTS-1000	2nd Video IF Amp. Decoupling-See Note 2
R28	150Ω	½	60B8-151	BTS-150	3rd Video IF Amp. Cathode
R29	1000Ω 20%	½	60B8-102	BTS-1000	3rd Video IF Amp. Decoupling
R30	4700Ω	½	98A45-20	BTS-4700	Video Det. Load
R31	680KΩ 20%	½	60B8-684	BTS-680K	AGC Diode Load
R32	680KΩ 20%	½	60B8-684	BTS-680K	AGC Network
R33	1.2 Meg.	½	60B8-125	BTS-1.2 Meg.	Video Amp. Grid
R34	5600Ω	1	60B14-562	BTA-5600	Video Amp. Plate
R35	10KΩ	½	60B7-103	BTS-10K	Isolation
R36	270KΩ	½	60B8-274	BTS-270K	Isolation
R37	470KΩ	½	60B8-474	BTS-470K	Voltage Divider
R38	470KΩ	½	60B8-474	BTS-470K	Picture Tube Cathode
R39	470KΩ	½	60B8-474	BTS-470K	Sound IF Grid
R40	82Ω	½	60B8-820	BTS-82	Sound IF Cathode
R41	690Ω 20%	½	60B8-102	BTS-680	Sound IF Decoupling-See Note 5
R42	390Ω	½	60B8-391	BTS-390	Balancing-See Note 2
R43	10KΩ 5%	½	60B7-103	BTS-10K-5%	Ratio Det. Diode Load
R44	10KΩ 5%	½	60B7-103	BTS-10K-5%	Ratio Det. Diode Load
R45	47KΩ	½	60B8-473	BTS-47K	De-emphasis
R46	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.	AF Amp. Grid
R47	150KΩ 20%	½	60B8-154	BTS-150K	AF Amp. Plate
R48	47KΩ	½	98A45-17	BTS-47K	AF Amp. Decoupling
R49	470KΩ	2	60B8-474	BTB-470K	AF Output Grid
R50	330Ω 5%	1	60B14-331	BTA-330	AF Output Cathode
R51	2.2 Meg.	½	60B8-225	BTS-2.2 Meg.	Sync. Amp. Grid
R52	47KΩ	½	98A45-17	BTS-47K	Sync. Amp. Plate
R53	270KΩ	½	60B8-274	BTS-270K	Sync. Sep. Cathode
R54	270KΩ	½	60B8-274	BTS-270K	Sync. Sep. Plate
R55	15KΩ 20%	½	60B8-153	BTS-15K	Voltage Divider
R56	1 Meg. 20%	½	60B8-105	BTS-1 Meg.	Sync. Clipper Grid-See Note 2
R57	22KΩ	1	60B14-223	BTA-22K	Sync. Clipper Plate
R58	15KΩ	½	60B8-153	BTS-15K	Voltage Divider
R59	22KΩ	½	60B8-223	BTS-22K	Integrator
R60	8200Ω	½	60B8-822	BTS-8200	Integrator
R61	8200Ω	½	60B8-822	BTS-8200	Integrator
R62	820KΩ	½	60B8-824	BTS-820K	Vert. Osc. Grid
R63	8200Ω	½	60B8-822	BTS-8200	Vert. Peaking
R64	1 Meg.	½	60B8-105	BTS-1 Meg.	Voltage Divider-See Note 2
R65	1 Meg.	½	60B8-105	BTS-1 Meg.	Vert. Output Grid-See Note 2
R66	470Ω	½	60B8-471	BTS-470	Vert. Output Cathode
R67	820KΩ 20%	½	60B8-824	BTS-820K	Horiz. AFC Grid
R68	8200Ω	½	60B8-822	BTS-8200	Horiz. AFC Filter
R69	150KΩ 20%	½	60B8-154	BTS-150K	Horiz. AFC Cathode
R70	220KΩ	1	60B8-224	BTA-220K	Horiz. AFC Cathode
R71	2.7 Meg.	1	60B8-275	BTA-2.7 Meg.	Voltage Divider
R72	100KΩ	½	60B8-104	BTS-100K	Horiz. Osc. Grid

RESISTO

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ADMIRAL PART No.	IRC PART No.
R73	8200Ω 20%	½	60B8-822	BTS-8200
R74	22KΩ 20%	½	60B8-223	BTS-22K
R75	120KΩ	1	60B8-124	BTA-120K
R76	33KΩ 20%	1	60B14-333	BTA-33K
R77	68KΩ	½	60B8-683	BTS-68K
R78	120KΩ	1	60B8-124	BTA-120K
R79	1 Meg. 20%	½	60B8-105	BTS-1 Meg
R80	68Ω 5%	1	60B7-680	
R81	47Ω	1	60B14-470	BW-1-47
R82	6800Ω	2	60B20-682	BTB-6800
R83	1000Ω	1	60B14-102	BTA-1000
R84	560KΩ	½	60B8-564	BTS-560K
R85	1.8Ω	½	60B28-46	
R86	1 Meg.	½	60B8-105	
R87	50Ω	10	61A7-54	1 3/4A-50
R88	390Ω	2	60B20-391	BTB-390
R89A	1500Ω	10		
B	750Ω	5	61B14-1	
C	1000Ω	2		
R90	15KΩ	2	60B20-153	BTB-15K
R91	100KΩ 20%	½	60B8-104	BTS-100K
R92	470KΩ	½	60B8-474	BTS-470K

Note 1. In some models resistors may be connected in
Note 2. In some models resistors may be connected in
Note 3. Some models may use 47Ω in this application.
Note 4. Some models may use 68Ω in this application.
Note 5. Some models may use 1000Ω in this applicatio
Note 6. Not used in all models.
Note 7. In "TV Only" models R89 is a single 1500Ω, 10
Note 8. Not used in "TV Only" models.

TRANSFO

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	ADMIRA PART
T1	117VAC	600VCT	5VAC	6.3VAC	80C26-2
	⑤ 1.5A	.220ADC	⑤ 2A	⑤ 8.5A	

⑤ Add series resistor to reduce plate voltage and dr

TRANSFORME

ITEM No.	RATING PRI.	RATING DC RESISTANCE SEC.	ADMIRAL PART No.	REPLA STANCO PART No
T2	210Ω	1100Ω	79A18-3	A-8111 ①
T3	400Ω	4.1Ω	79C32-1	
	Tap ⑤	Tap ⑤		
	48Ω	.4Ω		
		SEC. 2		
		0Ω		
T4	1350Ω		79B29-2	A-8123
	Tap ⑤			
	13Ω			
T5A	14Ω		A3222	
B	48Ω			
T6	275Ω		69C117-3	
	Tap ⑤			
	100Ω			

① Drill one new mounting hole.

TRANSFORME

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	ADMIRAL PART No.	REPL STAN PART
T7A	4800Ω	3.5Ω	280Ω	.4Ω	79B31-1 ②	A-38
B	3500Ω	3.5Ω	260Ω	.3Ω	79B31-2 ③	A-38

S

ITEM No.	RATINGS		REPLACEME ADMIRAL PART No.	JEN PART
	FIELD RES.	V. C. IMP.		ST-11
SP1A	PM	3.5Ω	78B47-2 ②	MOD.
B	PM		78B61 ③	
C	PM		78B60-1 ③	
	CONE DIA.	V. C. DIA.		
SP2A	9 5/8"	3/4"		
B	5 7/8"			
C	4 7/8"			

SCRIPTIONS (Continued)

CONT.)

IDENTIFICATION CODES
Horiz. Osc. Transformer Shunt
Horiz. Osc. Transformer Shunt
Feedback
Horiz. Osc. Plate
Voltage Divider
Voltage Divider
Horiz. Output Grid-See Note 2
Parasitic Supp.
Horiz. Output Cathode
Horiz. Output Screen
Voltage Divider
Feedback
HV Rect. Filament
HV Filter
LV Filter-Wire Wound
Focus Coil Shunt
Voltage Dropping } See Note 7
Voltage Dropping } See Note 7
Voltage Dropping } See Note 7
Bleeder -See Note 8
Voltage Dividing
Video Amp. Grid Leak-See Note 6

ilel to obtain desired value.
es to obtain desired value.

resistor, Mfgr's part #61A3-15.

ER (POWER)

REPLACEMENT DATA		
STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
		TP-410 ⑧

r mounting holes.

WEEP CIRCUITS)

NT DATA		
MERIT PART No.	CHICAGO PART No.	NOTES
A-3000 ① HVO-6	TBO-1 ①	Vert. Block Osc. Trans. Hor. Output Trans.
A-3037		Vert. Output Trans.
MD-70		Hor. Deflection Coil Vert. Deflection Coil Focus Coil

UDIO OUTPUT)

ENT DATA		
MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
A-3019 ① A-3018 ①	RO-9 RO-8 ①	① Drill one new mounting hole. ② Used in chassis 20V1. ③ Used in chassis 20T1.

KER

ATA		
QUAM PART No.		INSTALLATION NOTES
10A4A		② Used in chassis 20V1. ③ Used in chassis 20T1. ④ Replace output transformer to match 6-8Ω voice coil.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ADMIRAL PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L1	Ant. Coil	0Ω	0Ω	†		† Refer misc. section
L2	RF, Mixer & Osc. Coils	0Ω		†		† Refer misc. section
L3	Fil. Choke	0Ω		58A45-13		
L4	Fil. Choke	0Ω		98A45-13		
L5	1st Video IF	1.1Ω		98A45-77		
L6	Adj. Channel Trap	0Ω		72A102 *		* Includes 120MMF capacitor
L7	Fil. Choke	0Ω		73A2-5		
L8	2nd Video IF	.5Ω	.5Ω	72C96-11		
L9	3rd Video IF	.5Ω	.5Ω	72C96-10		
L10	Fil. Choke	0Ω		73A2-5		
L11	4th Video IF	.5Ω	.5Ω	72C96-9		
L12	Peaking	6.8Ω		73A5-6		Wound on 33KΩ resistor
L13	Peaking	17Ω		73A5-7		
L14	Peaking	7.5Ω		73A5-8		Wound on 22KΩ resistor
L15	Peaking	8.5Ω		73A5-9		Wound on 10KΩ resistor
L16	Sound Trap	4.9Ω		72B99-3		
L17	Sound IF	4.9Ω		72B99-2		
L18	Ratio Det. Trans.	3.5Ω	.4Ω	72B68		
L19	Horiz. Osc. Coil	80Ω	50Ω	69B110		
L20	Horiz. Lin.	6.5Ω		94A28		
L21	Width Coil	.4Ω		94A29-2		

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M1	RF Tuner	94C21-2	
M2	Fuse	84A4-2	.25A 250V Type 3AG
M3	Ion Trap	94A15-2	
	Ant. Coil	98A62-2	Channel 2
	Ant. Coil	98A62-3	Channel 3
	Ant. Coil	98A62-4	Channel 4
	Ant. Coil	98A62-5	Channel 5
	Ant. Coil	98A62-6	Channel 6
	Ant. Coil	98A62-7	Channel 7
	Ant. Coil	98A62-8	Channel 8
	Ant. Coil	98A62-9	Channel 9
	Ant. Coil	98A62-10	Channel 10
	Ant. Coil	98A62-11	Channel 11
	Ant. Coil	98A62-12	Channel 12
	Ant. Coil	98A62-13	Channel 13
	RF, Mixer & Osc. Coils	98A63-2	Channel 2
	RF, Mixer & Osc. Coils	98A63-3	Channel 3
	RF, Mixer & Osc. Coils	98A63-4	Channel 4
	RF, Mixer & Osc. Coils	98A63-5	Channel 5
	RF, Mixer & Osc. Coils	98A63-6	Channel 6
	RF, Mixer & Osc. Coils	98A63-7	Channel 7
	RF, Mixer & Osc. Coils	98A63-8	Channel 8
	RF, Mixer & Osc. Coils	98A63-9	Channel 9
	RF, Mixer & Osc. Coils	98A63-10	Channel 10
	RF, Mixer & Osc. Coils	98A63-11	Channel 11
	RF, Mixer & Osc. Coils	98A63-12	Channel 12
	RF, Mixer & Osc. Coils	98A63-13	Channel 13
	Safety Glass	23D69	
	Knob	33C53-9	Channel selector
	Knob	33C53-10	Fine tuning
	Knob	33C53-12	Contrast
	Knob	33C53-11	Volume
	Escutcheon	23C58-1	Control
	Escutcheon	23C58-2	Door

RADIO **PARTS LIST AND DESCRIPTIONS**

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V21	Converter	6BE6	6BE6	7CH	
V22	IF Amplifier	6BA6	6BA6	7BK	
V23A	Det. - AVC - AF	6AV6	6AV6	7BT	
B	Det. - AVC - AF	6AT6	6AT6	7BT	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C68	4.5		65B1-62	SI 5	TCZ-4.7	5W5V5	GP1K-5	MS-55	Ant. Coupling
C69	.1	200	64B5-30	P288-1	DF-104	PTE-4P1		2TM-P1	AVC Filter
C70	50		65B6-4	SI50	D6-500	5W5Q5	GP1K-50	19C28	Osc. Grid Cap.
C71	5000		65A10-1	BPD-005	DD-502	ID5D5	811-005	29C1	Osc. Anode Bypass
C72	.1	400	64B5-20	P488-1	DF-104	PTE4P1		4TM-P1	Decoupling
C73	5000		65A10-1	BPD-005	DD-502	ID5D5	811-005	29C1	IF Amp. Screen
C74A	100		**63A3-1	SI100	*PC-50	5W5T1	GP1K-100	19C11	Diode RF Filter
B	100			SI100		5W5T1	GP1K-100	19C11	Diode RF Filter
C75	250		65B6-5	SI250	D6-251	5W5T25	GP2K-250	1FM-325	Tone Compensation
C76	.01	400	64B5-25	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Tone Compensation
C77	.002	600	64B5-14	P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Tone Compensation
C78	.01	400	64B5-25	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Audio Coupling

** Items C74A, C74B and R99 are combined into one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R93A	2 Meg.	½	75B11-12	Concentrikit	RTV-46	SBBT-531-S	Tone control-front
B	2 Meg.	½		B11-139 *			Volume control-tapped at 1 Meg.-rear
C	Shaft End	½		B18-139X *			Attach per instr. in . "Concentrikit".
D	Switch	½		E-202 *			Attach per instr. in "Concentrikit".
				76-1 *			

* Additional parts to be used with "Concentrikit".

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	IDENTIFICATION CODES
R94	22KΩ	½	60B8-223	BTS-22K	Osc. Grid
R95	10KΩ	1	60B14-103	BTA-10K	Osc. Anode
R96	150Ω	½	60B8-151	BTS-150	IF Amp. Cathode
R97	27KΩ	1	60B14-273	BTA-27K	IF Amp. Screen
R98	2200Ω	2	60B20-222	BTB-2200	Decoupling
R99	47KΩ	½	63A3-1		Diode Filter-See Note 9
R100	1 Meg.	½	60B8-105	BTS-1 Meg.	AVC Network
R101	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.	AF Amp. Grid
R102	27KΩ	½	60B8-273	BTS-27K	Tone Compensation
R103	22Ω	½	60B8-220	BW-½-22	Isolation-See Note 10

Note 9. Items R99, C74A, C74B are combined into one unit.
Note 10. In some models resistors may be connected in parallel to obtain desired value.

COILS (RF-IF)

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: MEISSNER PART No.	NOTES
L22	Loop Ant.	1.4Ω		69C100-1 *		* Includes 2 capacitors
L23	Osc. Coil	6.5Ω		69A52-1		Tap at .8Ω
L24	1st IF	18Ω	18Ω	72B28-7		
L25	2nd IF	22Ω	22Ω	72B28-17		

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA: ADMIRAL PART No.	ASTATIC PART No.: CARTRIDGE	ASTATIC PART No.: NEEDLE	SHURE PART No.: CARTRIDGE	SHURE PART No.: NEEDLE	REMARKS
M4	409A13	AC-AG-J	A-AG	W26B	A66U	

ASTATIC AND SHURE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

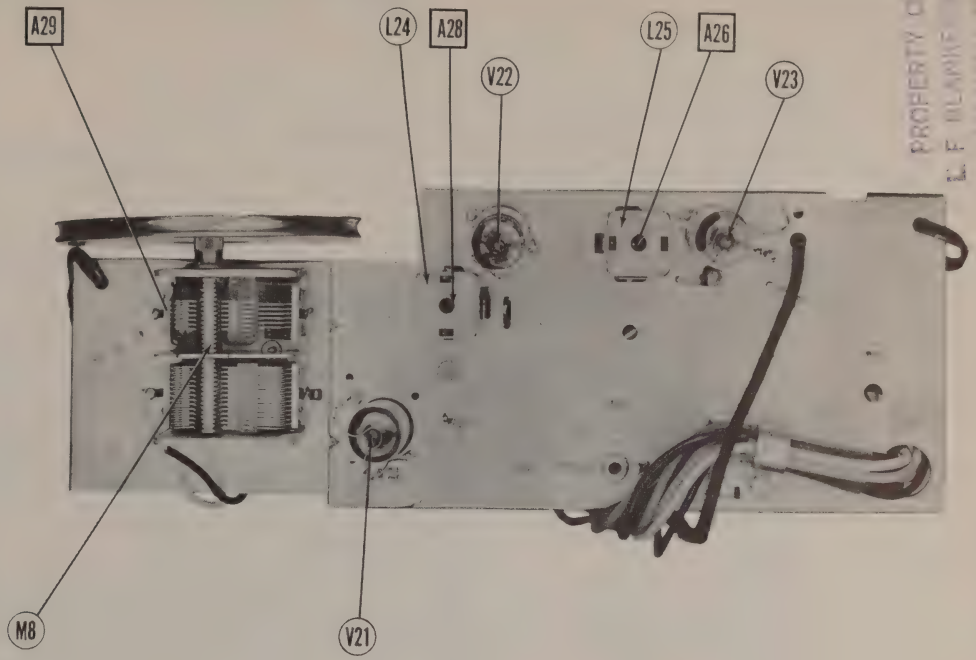
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA	NOTES
M5	Bayonet	6-8					Type #47
M6	Bayonet	6-8					Type #47

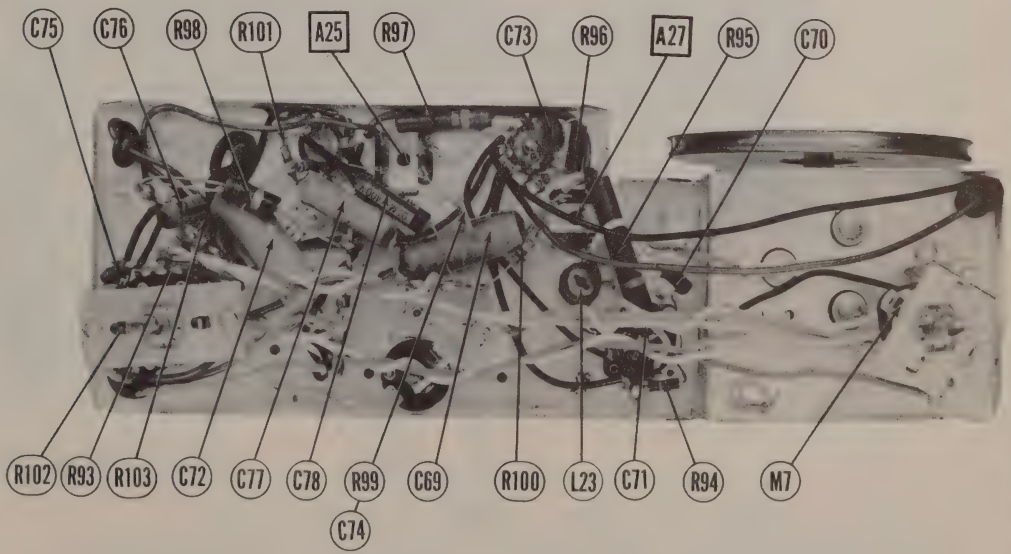
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M7	Switch	77A28-2	Function
M8	Tuning Cap.	68B32	
	Dial Scale	22B23-1	
	Escutcheon	23D63-3	
	Knob	33D55-1	Tuning
	Knob	33D55-4	Tone
	Knob	33D55-6	Volume
	Pointer	25A38	Dial
	Spring	19B1-3	Dial cord tension

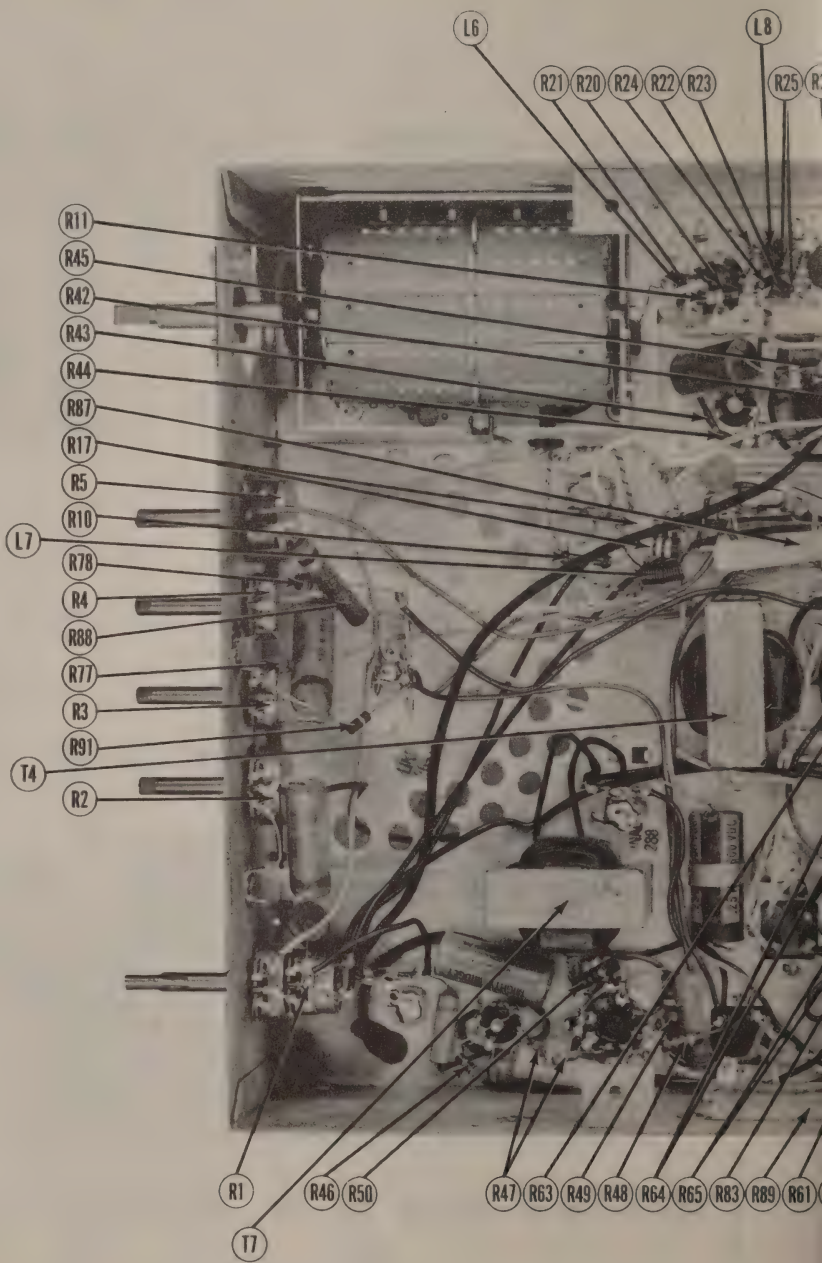
PROPERTY OF



RADIO CHASSIS-TOP VIEW



RADIO CHASSIS-BOTTOM VIEW



CHASSIS BOTTOM VIEW-RESISTOR

PHOTOFACT* Folder

AIRLINE MODEL
05GSE-3020A

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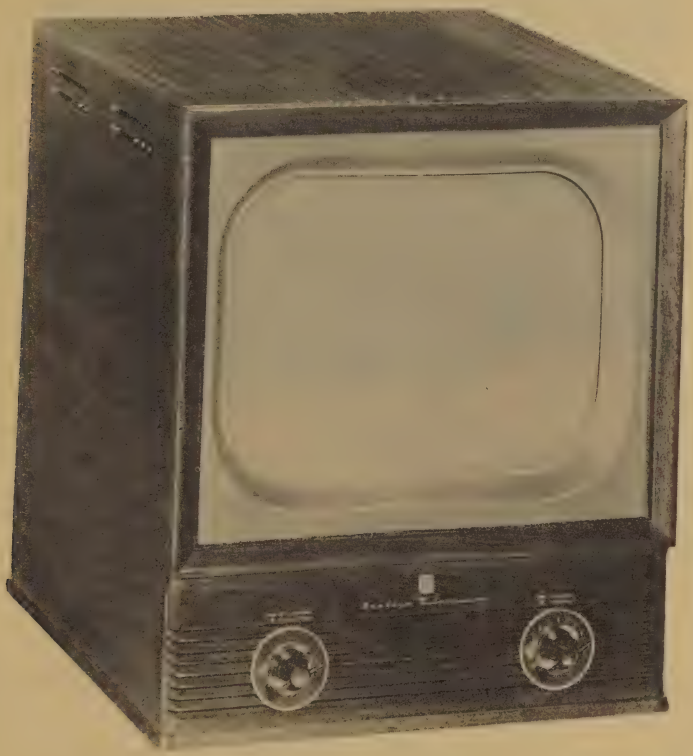

AIRLINE MODEL
05GSE-3020A

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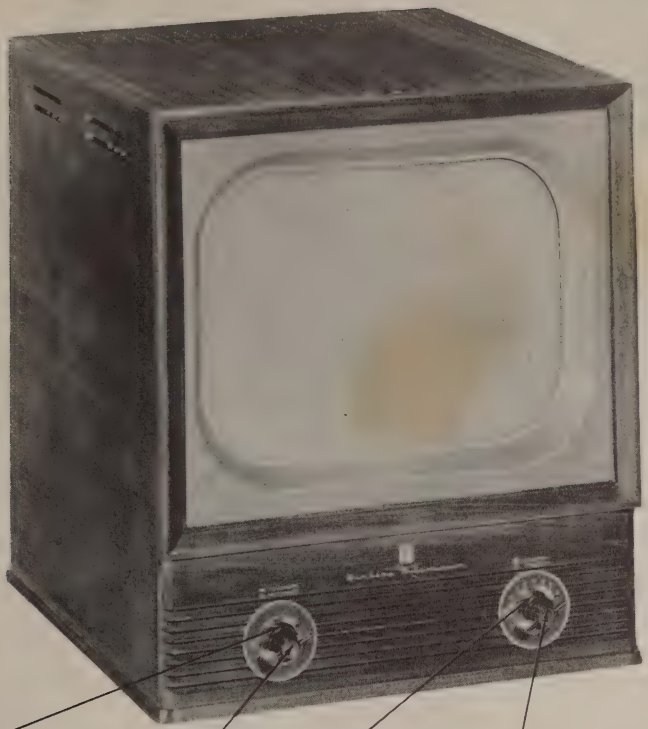

AIRLINE
MODEL 05GSE-3020A

TRADE NAME	Airline, Model 05GSE-3020A
SUPPLIER	Montgomery Ward and Company, 619 Chicago Ave., Chicago, Illinois
TYPE SET	Television Receiver
TUBES	Twenty One
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	1.8 Amp. at 117 Volts AC
TUNING RANGE	Channels 2 thru 13

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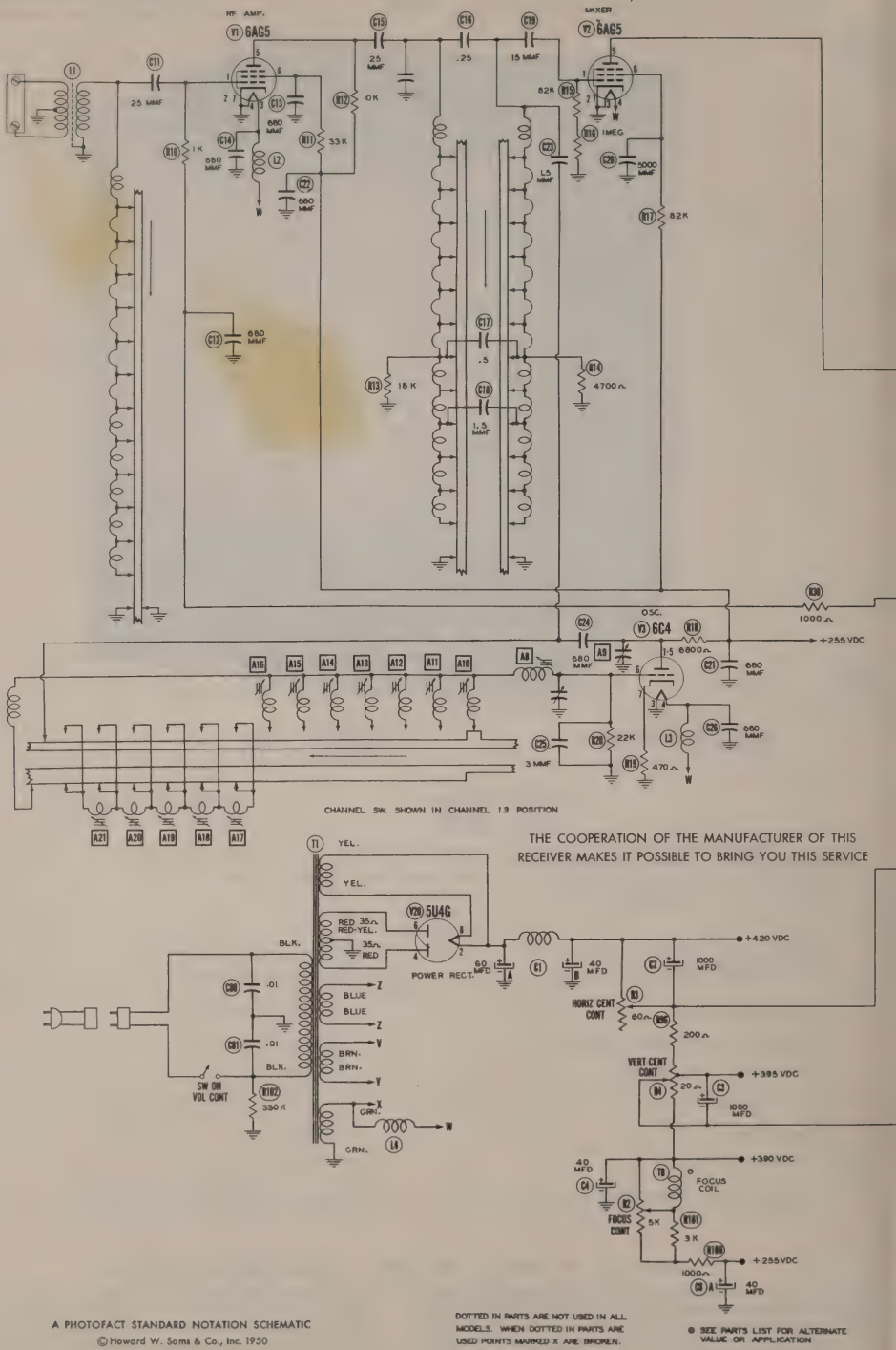

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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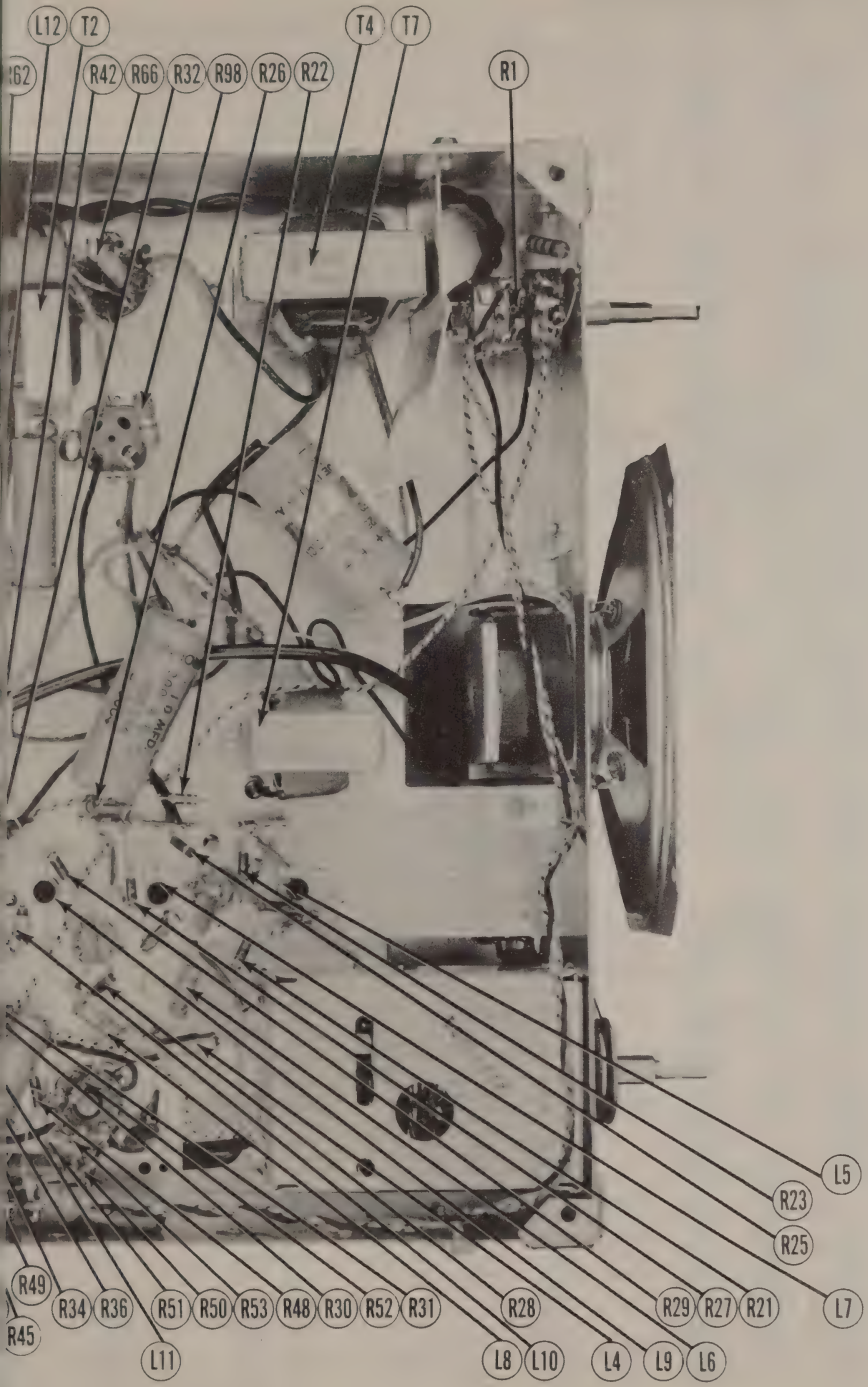
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION



AND INDUCTOR IDENTIFICATION

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIR LINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.		6AG5	7BD	
V2	Mixer		6AG5	7BD	
V3	Oscillator		6C4	6BG	
V4	1st Video IF		6AG5	7BD	
V5	2nd Video IF		6AG5	7BD	
V6	3rd Video IF		6AG5	7BD	
V7	Video Det. -AGC Rect.		6AL5	6BT	
V8	Video Amp.		6AH6	7BK	
V9	Sound IF Amp.		6AU6	7BK	
V10	Ratio Det. -AF Amp.		6T8	9E	
V11	Audio Output		6K6GT	7S	
V12	Sync. Sep. -Phase Inv. -DC Rest.		12AU7	9A	
V13	Vert. Osc. -Disch.		6SN7GT	8BD	
V14A	Vert. Output		6K6GT	7S	
B	Vert. Output		6V6GT	7AC	
V15	Hor. Phase Det.		6AL5	6BT	
V16	Hor. Mult.		6SN7GT	8BD	
V17	Hor. Output		6BG6G	5BT	
V18	Damper		6W4GT	4CG	
V19	HV Rect.		1B3GT	3C	
V20	LV Rectifier		5U4G	5T	
V21	Picture Tube		16TP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR LINE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	475	25E42	AF128X		UPT44150		TVL-2830	▲ Filter
B	40	475						TVA-1804	▲ Filter
C2	1000	5	25E52	PRS6/1000		BRH610		TVA-1104	Horiz. Cent. Cont. Bypass
C3	1000	3	25E50	PRS6/1000		BRH610		TVA-1104	Vert. Cent. Cont. Bypass
C4	40	450	25E47	PRS450/40		EDL2245		TVA-1712	Filter
C5	40	300	25E31	PRS450/40		EDL2245		TVA-1611	Filter
C6A	40	450	25E44	AF8J10D20B		UPT300		TVL-3706	▲ Filter
B	50	150							■ Filter
C	100	50							▲ Vert. Output Cathode
C7	100	10	25E12	PRS12/100		BRH121		TVA-1130	Vert. Amp. Cath. Byp.
C8	10	25	25E8	PRS25/10		BR102A		TVA-1204	Stabilizing Capacitor
C9A	10	475	25E51	AF23X		UP11150		TVL-3835	■ Filter
B	15	475							▲ Filter
C10	100	10	25E12	PRS12/100		BRH121		TVA-1130	Horiz. Output Cathode
C11	25			SI25	D6-250		GP1K-25	19C27	RF Coupling
C12	680			SI680	D6-681		GP2K-680	19C17	AGC Filter
C13	680			SI680	D6-681		GP2K-680	19C17	RF Screen Bypass
C14	680			SI680	D6-681		GP2K-680	19C17	RF Filament Bypass
C15	25			SI25	D6-250		GP1K-25	19C27	RF Coupling
C16	.25								RF Coupling
C17	.5				TCZ-.5				RF Coupling
C18	1.5			SI1.5NPO	TCZ-1.5		NPOK-1.5		RF Coupling
C19	15			SI15	D6-150		GP1K-15	19C22	RF Coupling
C20	5000			BPD-005	DD-502		811-005	29C1	Mixer Screen Bypass
C21	680			SI680	D6-681		GP2K-680	19C17	RF Bypass
C22	680			SI680	D6-681		GP2K-680	19C17	RF Bypass
C23	1.5			SIL.5NPO	TCZ-1.5		NPOK-1.5		Oscillator Coupling
C24	680			SI680	D6-681		GP2K-680	19C17	Oscillator Feedback
C25	3						N150K-3		Oscillator Feedback
C26	680			SI680	D6-681		GP2K-680	19C17	Oscillator Fil. Bypass
C27	100		23E2027-2	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C28A	4000		23E2037	BPD-2x004	DD-2-502	{1D5D4	882-2x004	36C2	Mixer Plate Decoupling
B	4000					{1D5D4			1st Video IF Decoupling
C29	5000		23E2025	BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C30	5000		23E2025	BPD-0C	DD-502	1D5D5	811-005	29C1	1st Video IF Filament
C31	100		23E2027-2	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C32	5000		23E2025	BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C33	1.0	200	23E226	484-1.0		GT2W1		2TM-M1	AGC Filter
C34A	4000		23E2037	BPD-2x004	DD-2-502	{1D5D4	882-2x004	36C2	2nd Video IF Decoupling
B	4000					{1D5D4			2nd Video IF Filament
C35	100		23E2027-2	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C36A	4000		23E2037	BPD-2x004	DD-2-502	{1D5D4	882-2x004	36C2	3rd Video IF Plate Dec.
B	4000					{1D5D4			3rd Video IF Screen
C37A	4000		23E2037	BPD-2x004	DD-2-502	{1D5D4	882-2x004	36C2	3rd Video IF Cathode
B	4000					{1D5D4			3rd Video IF Filament
C38	100		23E2027-2	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C39	10		23E25	SI10	D6-100	5W5Q1	GP1K-10	19C19	IF Coupling
C40	5		23E28	SI5	TCZ-4.7	5W5V5	GP1K-5	MS-55	Video Diode Filter
C41A	4000		23E2037	BPD-2x004	DD-2-502	{1D5D4	882-2x004	36C2	Video Det. - AFC Fil.
B	4000					{1D5D4			DAGC Decoupling
C42	.1	400	23E418	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C43	.05	200	23E216	P288-05	DF-503	PTE4S5		2TM-S5	Picture Tube Cath. Byp.
C44	2		23E21		TCZ-2.2				Sound IF Coupling
C45	3		23E13				N750K-3		Fixed Trimmer
C46A	4000		23E2037	BPD-2x004	DD-2-502	{1D5D4	882-2x004	36C2	Sound IF Cathode
B	4000					{1D5D4			Sound IF Decoupling
C47	1000		23E2012	SI1000	D6-102	1W5D1	GP2L-001	29C21	Diode Load Capacitor
C48	.002	600	23E205	P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	De-emphasis
C49	.05	400	23E416	P488-05	DF-503	PTE4S5		4TM-S5	Ratio Det. - AF Filament
C50	5000		23E2025	BPD-005	DD-502	1D5D5	811-005	29C1	Ratio Det. - AF Filament
C51	.05	400	23E416	P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C52	.005	600	23E208	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C53	1000		23E2012	SI1000	D6-102	1W5D1	GP2L-001	29C21	RF Bypass
C54	.05	400	23E416	P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C55	.05	400	23E416	P488-05	DF-503	PTE4S5	GP2L-001	4TM-S5	Bias Filter
C56	5000		23E2025	BPD-005	DD-502	1D5D5	811-005	29C1	Output Plate Bypass
C57A	2000			SI2000		1W5D2	GP2M-002	29C2	Integrator Network
B	5000		*23E2023-4	BPD-005	*PC-100	1D5D5	811-005	29C1	Integrator Network
C	5000			BPD-005		1D5D5	811-005	29C1	Integrator Network

CAPACI

ITEM No.	RATING: CAP.	RATING: VOLT	REPLAC: AIR LINE PART No.	REPLAC: AEROVOX PART No.	REPLAC: CENT PAR
C58	.005	600	21E6D6	P688-005	D6-
C59	.2	400	23E420	P488-22	
C60	.1	600	23E618	P688-1	DF-
C61	.05	400	23E416	P488-05	DF-
C62	.2	400	23E420	P488-22	
C63	1000		23E2012	SI1000	D6-
C64	1000		23E2012	SI1000	D6-
C65	.005	600	23E608	P688-005	D6-
C66	.05	600	23E616	P688-05	DF-
C67	.002	200	23E205	P688-002	D6-
C68	.002	200	23E205	P688-002	D6-
C69	.01	400	23E216	P488-01	D6-
C70	.25	200	23E222	P488-25	
C71	400	500	23E2030-4	1468-0004	D6-
C72	4000	500	23E86	1464-004	
C73	500		23E2030-9	1468-0005	D6-
C74	125			1468-00015	TC
C75	125			1468-00015	TC
C76	.05	400	23E616	P488-05	DF-
C77	.1	600	23E618	P688-1	
C78	.05	600	23E616	P688-05	
C79	500	20000	23E2039	HV20C	TV
C80	.01	400	23E2035-3	P488-01	D6-
C81	.01	400	23E2035-3	P488-01	D6-
C82	.05	400	23E416	P488-05	DF

* Items C57A, C57B, C57C, R60A, R60B and R60C are
† Items C67 and C68 are replaced by .005MFD in some
‡ Some models use .05MFD in this application.
§ Not used in all models.

C

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR LINE PART No.	REPLACEMENT DATA: IRC PART No.	CI F
R1A	35KΩ	½	28E64-2		RT
B	500KΩ	½			
R2	5000Ω	2	28E57	W-5000	43
R3	60Ω	2	28E54	W-60	58
R4	20Ω	2	28E68	W-20	43
R5A	50KΩ	½	28E43	Q11-123	AG
B	Shaft		Not Req.	Not Req.	FK
R6A	5000Ω	½	28E44	Q11-114	AG
B	Shaft		Not Req.	Not Req.	FK
R7A	250KΩ	½	28E45	Q11-130	AG
B	Shaft		Not Req.	Not Req.	FK
R8A	1 Meg.	½	28E36	Q11-137	AG
B	Shaft		Not Req.	Not Req.	FK
R9A	1000Ω	½	28E65	Q11-108	AM
B	Shaft		Not Req.	Not Req.	RS

R

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR LINE PART No.	REPLACEMENT DATA: IRC PART No.
R10	1000Ω 20%	½		BTS-1000
R11	33KΩ 20%	½		
R12	10KΩ 20%	½		
R13	18KΩ 20%	½		
R14	4700Ω	½		BTS-4700
R15	82KΩ	½		
R16	1 Meg. 20%	½		
R17	82KΩ	½		
R18	6800Ω 20%	½		
R19	470Ω 20%	½		BTS-470
R20	22KΩ 20%	½		
R21	1000Ω	½	27E102-2	BTS-1000
R22	330Ω	½	27E331-2	BTS-330
R23	6800Ω 5%	½	27E1009-13	
R24	10Ω	½	27E100-2	
R25	1000Ω	½	27E102-2	BTS-1000
R26	330Ω	½	27E331-2	BTS-330
R27	6800Ω 5 %	½	27E1009-13	
R28	100Ω	½	27E101-2	BTS-100
R29	1000Ω	½	27E102-2	BTS-1000
R30	1000Ω	½	27E102-2	BTS-1000
R31	100Ω	½	27E101-2	BTS-100
R32	1000Ω	½	27E102-2	BTS-1000
R33	1000Ω	½	27E102-2	BTS-1000
R34	8200Ω 5%	½	27E822-2	BTS-8200
R35	100Ω	½	27E-101-2	
R36	220KΩ 20%	½	27E1009-6	BTS-220K
R37	330KΩ 5%	½	27E334-2	BTS-330K
R38	39KΩ	1	27E393-3	BTA-39K
R39	330Ω	½	27E331-2	BTS-330
R40	6800Ω 5%	1	27E1009-14	BTA-6800
R41	47KΩ	½	27E473-2	BTS-47K
R42	500Ω	5	27E1016-4	1 3/4A-50
R43	270Ω	½	27E271-2	BTS-270
R44	33KΩ	1	27E333-3	
R45	6800Ω	½	27E682-2	BTS-6800
R46	6800Ω	½	27E682-2	BTS-6800
R47	39KΩ	½	27E393-2	BTS-39K
R48	10 Meg. 20%	½	27E106-2	BTS-10 Me
R49	220KΩ 20%	½	27E224-3	BTS-220K
R50	68KΩ	½	27E683-2	BTS-68K

DESCRIPTIONS

RS (CONT.)

T DATA				
	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
	PTE6D5	811-005	6TM-D5	Vert. Sync Coupling
	GT4P2		4TM-P22	Vert. Osc. Decoupling
	PTE6P1		6TM-P1	Vert. Discharge Dec.
	PTE4S5		4TM-S5	Vert. Discharge
	GT4P2		4TM-P22	Vert. Sweep Coupling
	1W5D1	GP2L-001	29C21	Horizo Sync Coupling
	1W5D1	GP2L-001	29C21	Horiz. Sync Coupling
	PTE6D5	811-005	6TM-D5	Voltage Divider
	PTE6S5		6TM-S5	Horiz. Feedback
	PTE6D2	GP2M-002	6TM-D2	AFC Filter †
	PTE6D2	GP2M-002	6TM-D2	AFC Filter †
	PTE4S1	811-01	4TM-S1	AFC Filter †
	GT2P25		2TM-P25	AFC Filter
	5W5T4	GP2K-390	1FM-34	Horiz, M.V. Feedback
	1DR5D4		MS-24	Fixed Trimmer
	5W5T5	GP2K-500	1FM-35	Horiz. Discharge
	5W5T15	GP2K-120	1FM-315	Horiz. Sweep Coupling
	5W5T15	GP2K-120	1FM-315	Horiz. Sweep Coupling
	PTE4S5		4TM-S5	Horiz. Output Screen
	PTE6P1		6TM-P1	Damper Filter
	PTE6S5		6TM-S5	Damper Filter
				High Voltage Filter
	PTE4S1	811-01	4TM-S1	Line Filter
	PTE4S1	811-01	4TM-S1	Line Filter
	PTE4S5		4TM-S5	AF Amp. Decoupling §

bined into one unit.
ls.

TROLS

TAT No.	CENTRALAB PART No.	INSTALLATION NOTES
		Brightness control-front
		Volume control and switch-rear
	VK-135	Focus control-Wire Wound
	VK-117	Horiz. centering control-Wire Wound
	VK-110	Vert. centering control-Wire Wound
	AN-31	Horiz. hold control
	AK-1	Attach to R5A per instructions
	AN-10	Vert. linearity control
	AK-1	Attach to R6A per instructions
	AN-50	Vert. size control
	AK-1	Attach to R7A per instructions
	AN-69	Vert. hold control
	AK-1	Attach to R8A per instructions
	B-5	Contrast control
	Not Req.	Attach to R9A per instructions

STORS

IDENTIFICATION CODES
ALL RESISTORS ARE ±10% UNLESS OTHERWISE STATED.

RF Amp. Grid
RF Amp. Screen
RF Amp. Plate
RF Coil Shunt
Mixer Coil Shunt
Mixer Grid
Mixer Grid
Mixer Screen
Oscillator Plate
Oscillator Cathode
Oscillator Grid
Converter Plate Decoupling
AGC Network
1st Video IF Amp. Grid
1st Video IF Amp. Cath. - See note 1.
1st Video IF Amp. Decoup.
AGC Network
2nd Video IF Amp. Grid
2nd Video IF Amp. Cathode
2nd Video IF Amp. Decoupling
AGC Network
3rd Video Amp. Cathode
3rd Video IF Amp. Screen
3rd Video IF Amp. Decoupling
Video Det. Diode Load
Parasitic Suppressor
AGC Network
AGC Diode Load
Voltage Divider
Video Amp. Cathode
Video Amp. Plate
Video Amp. Plate
Voltage Divider - Wire Wound
Sound IF Amp. Cathode
Sound IF Amp. Decoupling
Ratio Det. Diode Load
Ratio Det. Diode Load
De-emphasis
AF Amp. Grid
AF Amp. Plate
AF Amp. Plate Decoupling - See note 1.

RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIR LINE PART No.	IRC PART No.	
R51	220KΩ 20%	½	27E224-2	BTS-220KΩ	Audio Output Grid
R52	150KΩ 5%	½	27E1009-20	BTS-150K 5%	Audio Output Grid - See note 2.
R53	330KΩ 5%	½	27E1009-9	BTS-330K 5%	Bias Network
R54	2200Ω	½	27E222-2	BTS-2200	Picture Tube Grid
R55	270KΩ 20%	½	27E274-2	BTS-270K	DC Restorer Load
R56	150Ω	½	27E151-2	BTS-150	Sync. Separator Grid - See note 1.
R57	820KΩ	½	27E824-2	BTS-820K	Sync. Phase Inverter Grid
R58	4700Ω	½	27E472-2	BTS-4700	Sync. Phase Inverter Plate
R59	3900Ω	½	27E392-2	BTS-3900	Sync. Phase Inverter Plate
R60A	22KΩ	½			Integrator
B	8200Ω	½	23E2023-4 †		Integrator
C	8200Ω	½			Integrator
R61	820KΩ	½	27E1009-21	BTS-820K	Voltage Divider
R62	220KΩ 20%	½	27E1009-6	BTS-220K	Vert. Oscillator Plate Decoupling
R63	5600Ω	½	27E1009-8	BTS-5600	Vert. Peaking
R64	560KΩ	½	27E1009-11	BTS-560K	Vert. Discharge Plate
R65	100KΩ 20%	½	27E104-2	BTS-100K	Voltage Divider
R66	4.7 Meg.	1	27E475-2	BTA-4.7 Meg.	Vert. Output Grid
R67	2200Ω	½	27E222-2	BTS-2200	Vert. Output Cathode
R68	2200Ω	½	27E222-2	BTS-2200	Sync Phase Inverter Cathode
R69	27KΩ	½	27E273-2	BTS-27K	Feedback Network
R70	4700Ω	½	27E472-2	BTS-4700	Feedback Network
R71	100KΩ	½	27E1009-27	BTS-100K	Horiz. Phase Det. Load - See note 1.
R72	100KΩ	½	27E1009-27	BTS-100K	Horiz. Phase Det. Load - See note 1.
R73	470KΩ	½	27E474-2	BTS-470K	Horiz. AFC Filter Network - See note 1.
R74	33KΩ	½	27E333-2	BTS-33K	Horiz. Phase Det. Load - See note 1.
R75	33KΩ	½	27E333-2	BTS-33K	Horiz. Phase Det. Load - See note 1.
R76	470KΩ 20%	½	27E474-2	BTS-470K	Horiz. AFC Filter Network - See note 1.
R77	470KΩ 20%	½	27E474-2	BTS-470K	Horiz. AFC Filter Network - See note 1.
R78	470KΩ 20%	½	27E474-2	BTS-470K	Horiz. Multivibrator Grid
R79	33KΩ	½	27E333-2	BTS-33K	Horiz. Peaking
R80	1500Ω	½	27E152-2	BTS-1500	Horiz. Multivibrator Cathode - See note 3.
R81	5600Ω 5%	½	27E1009-8	BTS-5600 5%	Horiz. Multivibrator Plate
R82	100KΩ 20%	½	27E104-2	BTS-100K	Horiz. Multivibrator Grid
R83	220KΩ	½	27E1009-6	BTS-220K	Horiz. Multivibrator Plate - See note 4.
R84	8200Ω	½	27E822-2	BTS-8200	Horiz. Peaking - See note 5.
R85	1 Meg. 20%	½	27E1009-11	BTS-1 Meg.	Horiz. Output Grid - See note 6.
R86	47Ω	½	27E470-2		Parasitic Suppressor
R87	68Ω	½	27E680-2	BW-½-68	Horiz. Output Cathode - See note 1.
R88	100Ω	¼	27E101-2		Parasitic Suppressor
R89	47KΩ	2		BTB-47K	Horiz. Output Screen - See note 7.
R90	47KΩ	2		BTB-47K	Horiz. Output Screen - See Note 7.
R91	4700Ω	½	27E472-2	BTS-4700	Horiz. Linearity Coil Shunt See note 1.
R92	2200Ω	½	27E222-2	BTS-2200	Decoupling - See note 1.
R93	15KΩ	5	27E1016-13	1 3/4A-15K	Decoupling - Wire Wound - See note 1.
R94	3.3Ω	½	27E1015-4		High Voltage Rectifier Filament - Wire Wound
R95	1.2 Meg.	½	27E1009-5		High Voltage Filter
R96	200Ω	5	27E1016-12	1 3/4A-200	Centering Network - Wire Wound
R97	220KΩ 20%	½	27E224-2	BTS-220KΩ	Voltage Divider
R98	68KΩ	1	27E683-3	BTA-68K	Voltage Divider
R99	2.2Ω	½	27E1015-2	BW-½-2.2	Video Det. Filament - Wire Wound
R100	1000Ω	7.5	27E1016-10	1 3/4A-1000	Filter - Wire Wound
R101	3000Ω	3	27E1016-8	1 3/4A-3000	Focus Coil Shunt - Wire Wound
R102	330KΩ	½	27E334-2	BTS-330K	Line Isolation

† Items R60A, R60B, R60C, C57A, C57B and C57C are combined into one unit. See C57 for part listing.

Note 1. Not used in all models.
Note 2. Some models use a 180KΩ resistor in this application.
Note 3. Some models use a 330Ω and a 82Ω resistor in series to obtain required resistance and wattage.
Note 4. Some models use two 470KΩ resistors in parallel to obtain required resistance and wattage.
Note 5. Some models use a 10KΩ resistor in this application.
Note 6. Some models use 560KΩ resistor in this application.
Note 7. When R90 connects direct to +420VDC a single 15KΩ resistor is used in place of R89 and R90.

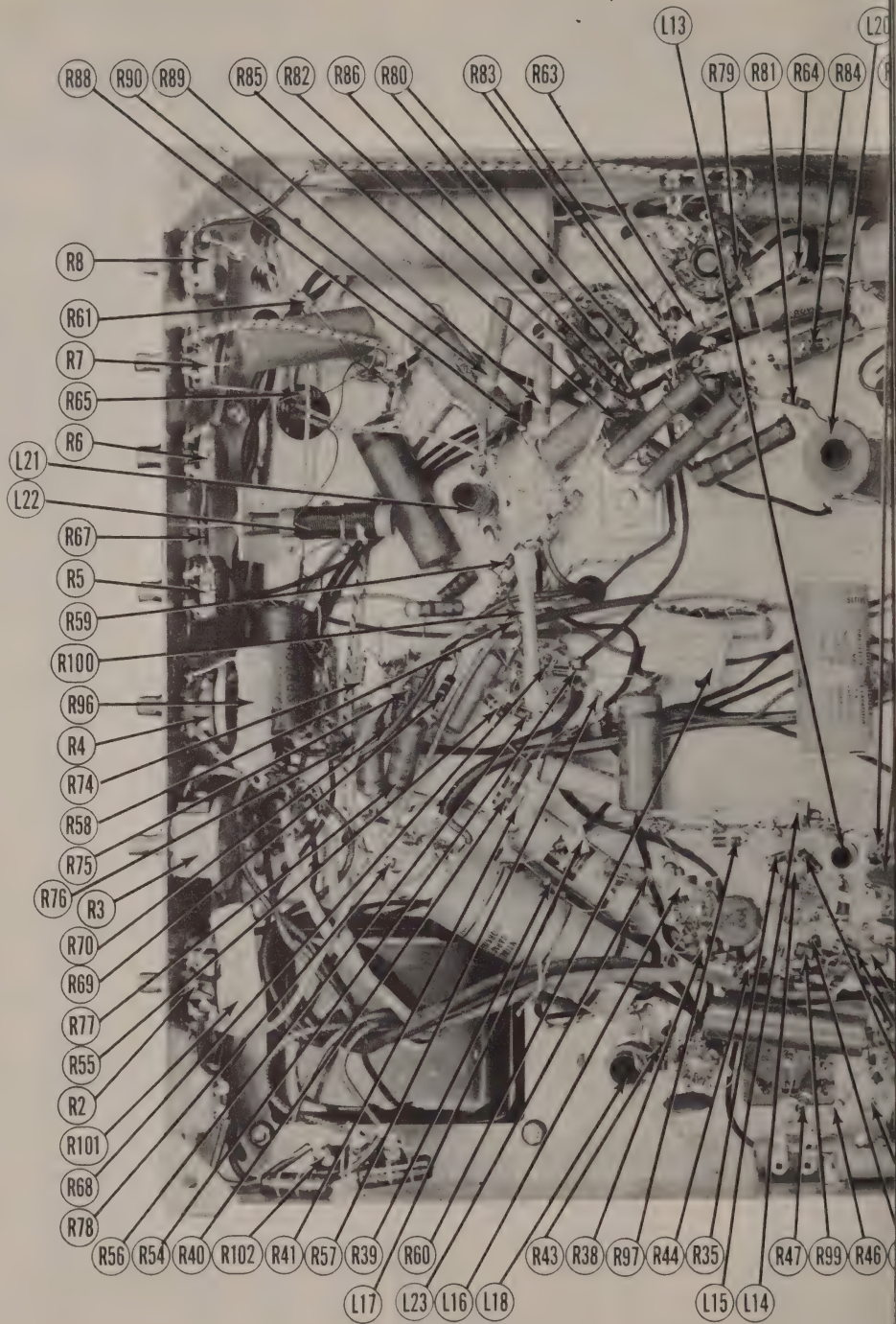
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	AIR LINE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	90Ω	4.2Ω	1E39		46E90S	
	CONE DIA.	V. C. DIA.				
SP2	4" x 6"	9/16"				

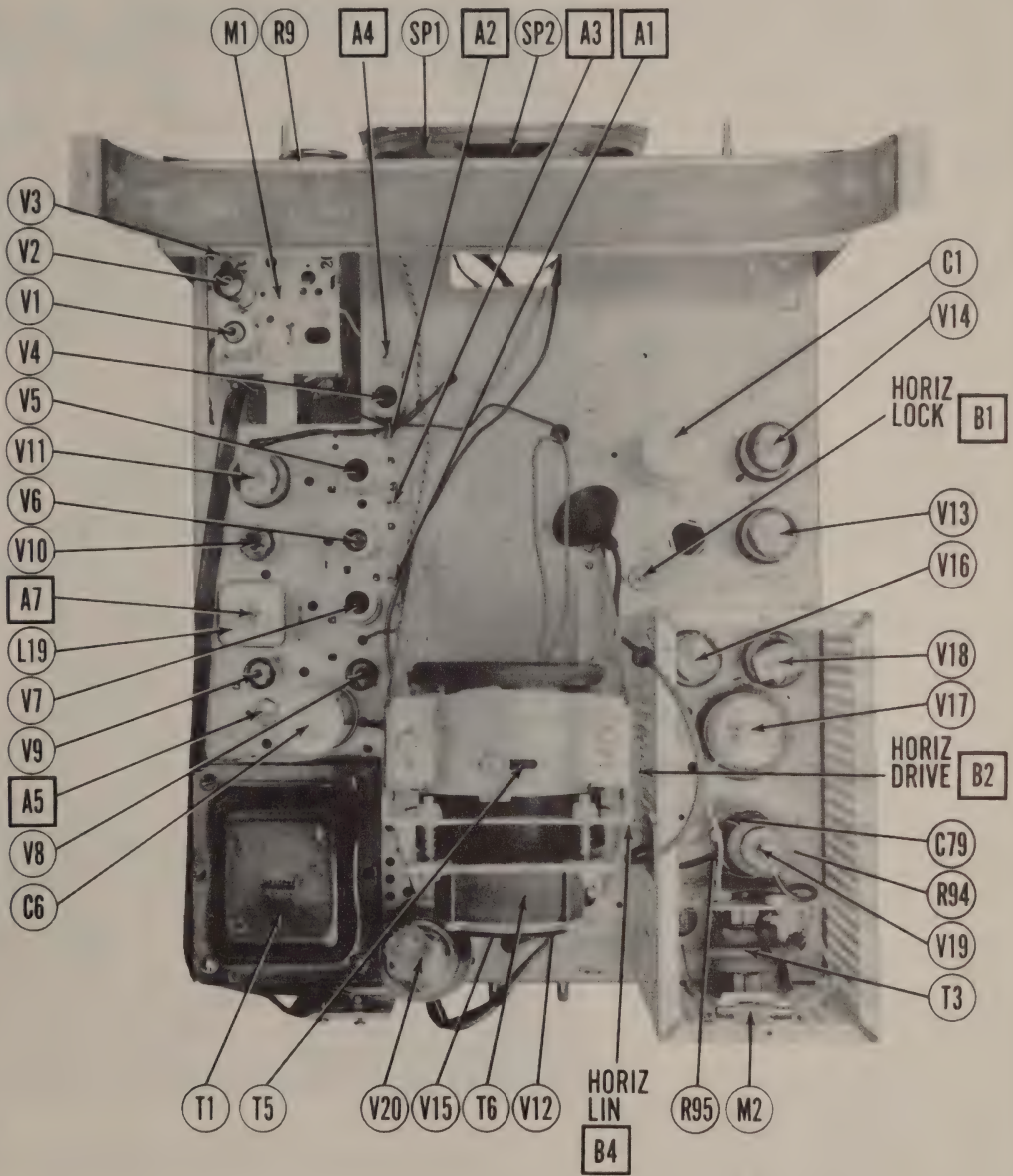
TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIR LINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 1.8A	800VCT .190ADC	5VAC @ 3A	6.3VAC @ 1.2A SEC. 4 6.3VAC @ 1.2A SEC. 5 6.3VAC @ 6.5A	22E56			

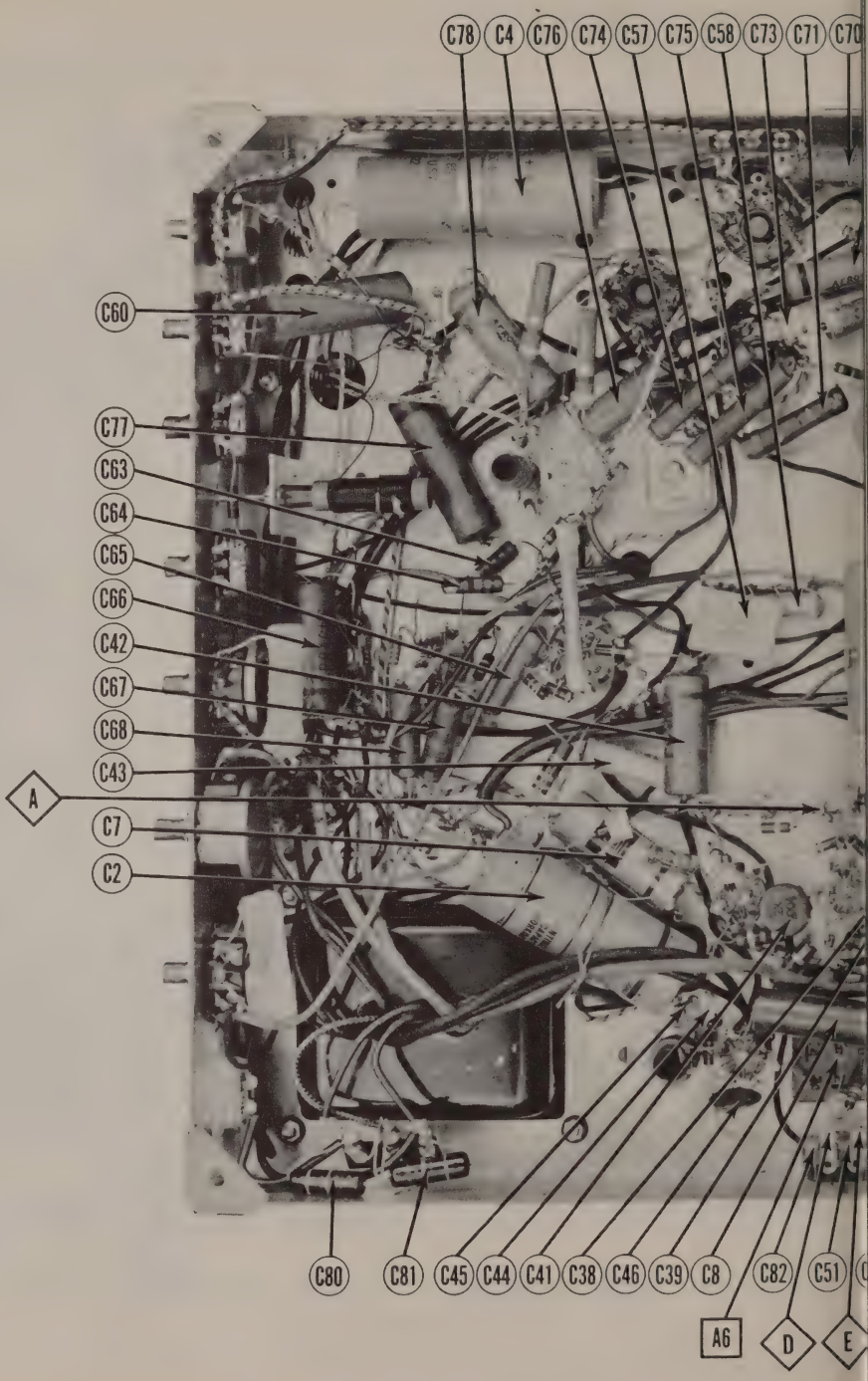
PARTS LIST CONTINUED ON PAGE 15



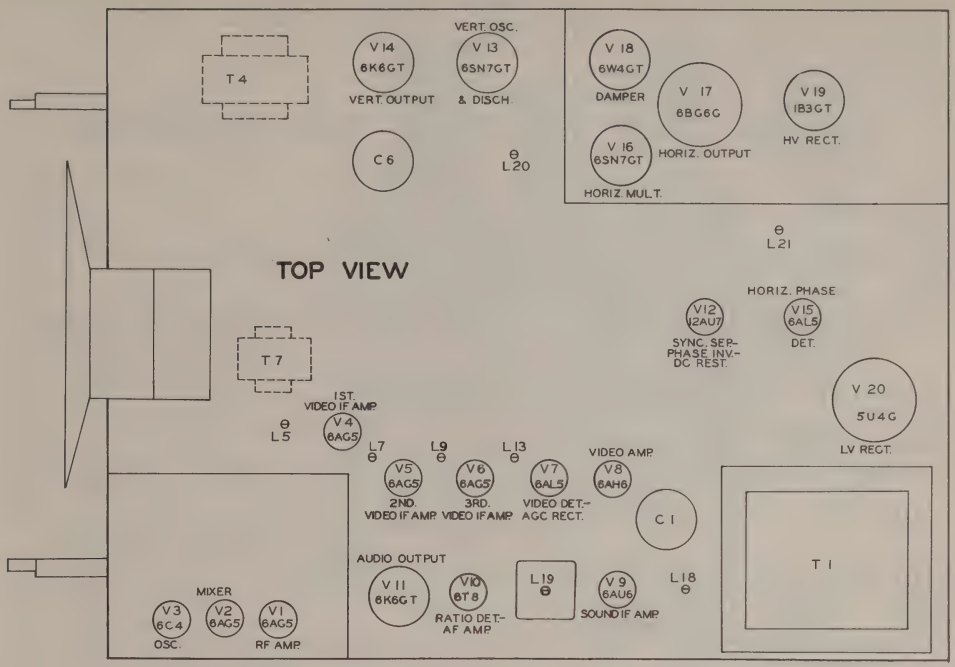
CHASSIS BOTTOM VIEW-RESISTOR

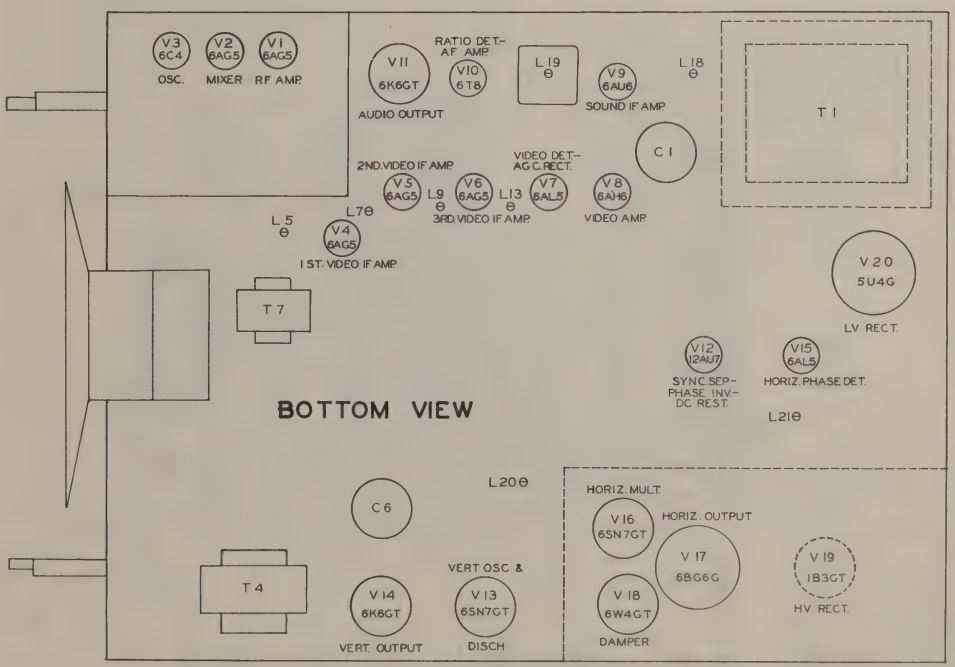


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITO





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If receiver is to be aligned with picture tube removed, the high voltage lead should be securely taped and dressed away from the chassis.

VIDEO IF ALIGNMENT

Remove the local oscillator tube (V3) from its socket to prevent erroneous indications.
Turn the contrast control fully counter-clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	25.75MC (Unmod.)	Any	DC Probe to Point (A). Common to chassis.	A1	Adjust for maximum deflection. Attenuate signal generator to maintain a maximum 1 volt reading.
2.	Direct	"	24.9MC	"	"	A2	"
3.	Direct	"	23.4MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	23.5MC (10MC SWP)	21MC 25.5MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. The 25.5MC marker should be at 50% response. If necessary, slightly retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

It should be noted that the common lead of the VTVM is at approximately 135 volts potential with respect to chassis. Avoid touching or grounding the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to pin 1 (Grid) of 6AH6 (V8). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (B). Common to Point (C).	A5, A6	Adjust for maximum deflection. Attenuate signal generator to maintain a maximum 3 volt reading.
6.	.01MFD	"	"	"	DC Probe to Point (D). Common to Point (C).	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD	High side to pin 1 (Grid) of 6AH6 (V8). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A5, A6	Disconnect stabilizer capacitor C8. Adjust for maximum amplitude and symmetry as per figure 2.
6.	.01MFD	"	"	"	"	Vert. Amp. to Point (D). Low side to chassis.	A7	Reconnect capacitor C8. Adjust A7 to place 4.5MC at center of crossover lines as per figure 3. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Replace the local oscillator tube (V3) in its socket.
If any individual channel oscillator adjustments screws for channel 7 thru 13 show insufficient range, it will be necessary to adjust the high band oscillator padder (A8). If A8 is adjusted, readjustment of all high band oscillator adjustments will be necessary.
If any of the individual channel oscillator screws on channel 2 thru 6 show insufficient range, it will be necessary to adjust the overall oscillator padder(A9). If A9 is adjusted, it will be necessary to readjust ALL individual channel oscillator screws.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A10	Adjust to place video marker as shown in figure 4.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A11	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A12	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A13	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A14	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A15	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A16	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A17	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A18	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A19	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A20	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A21	

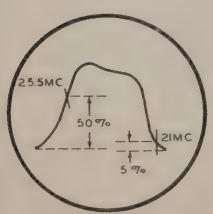


FIG. 1

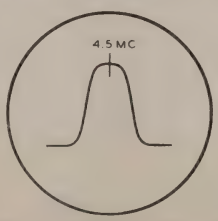


FIG. 2

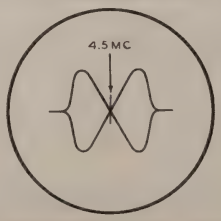


FIG. 3

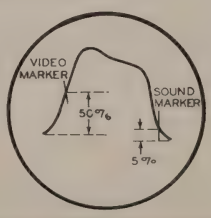
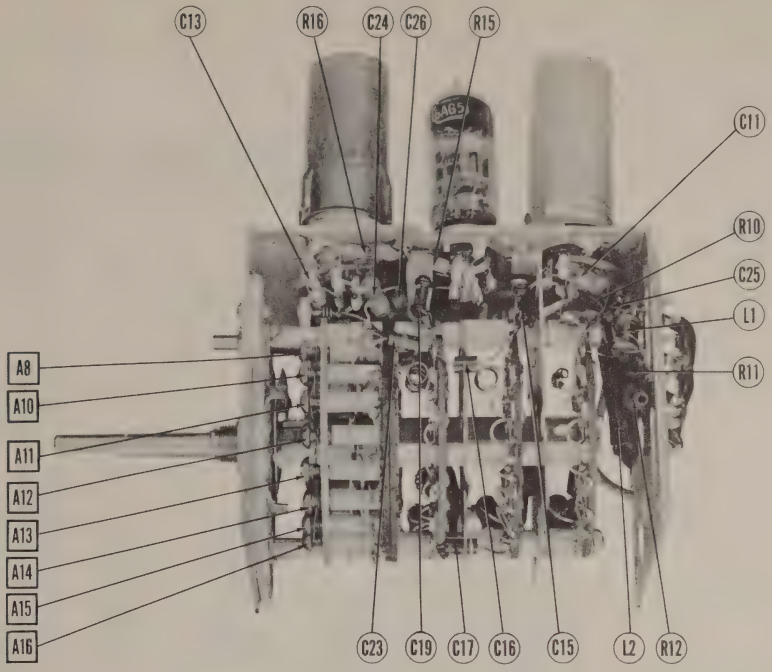
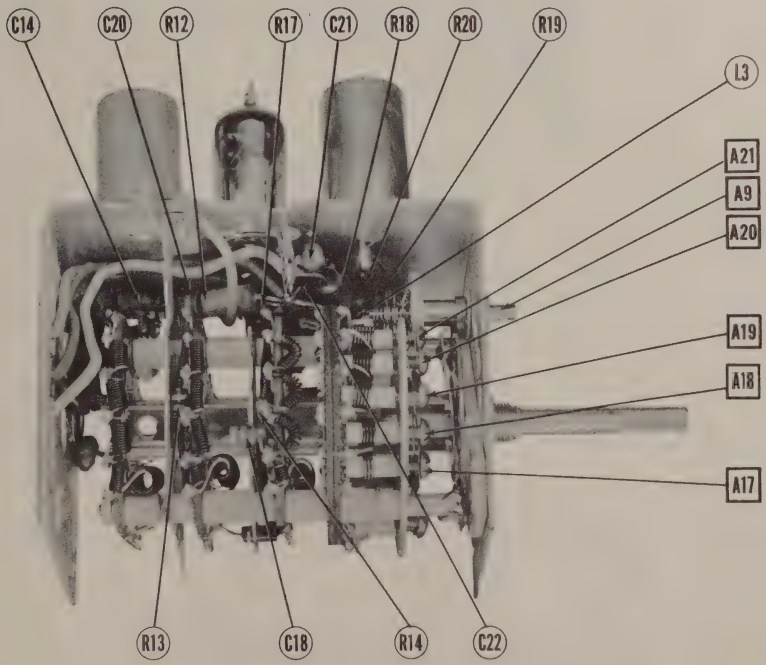


FIG. 4



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-1VDC	0V	6.3VAC	0V	140VDC	160VDC	0V		
V 2	6AG5	-2.2VDC	0V	0V	6.3VAC	250VDC	140VDC	0V		
V 3	6C4	175VDC	0V	0V	6.3VAC	175VDC	§-2VDC	5VDC		
V 4	6AG5	-1VDC	0V	6.3VAC	0V	130VDC	130VDC	0V		
V 5	6AG5	-1VDC	.4VDC	6.3VAC	0V	130VDC	130VDC	.4VDC		
V 6	6AG5	0V	1.3VDC	6.3VAC	0V	245VDC	130VDC	1.3VDC		
V 7	6AL5	.5VDC	-.7VDC	5.9VAC	0V	0V	0V	0V		
V 8	6AH6	.4VDC	0V	6.3VAC	0V	245VDC	135VDC	2.7VDC		
V 9	6AU6	#0V	#0V	#0V	#6.3VAC	#110VDC	#110VDC	#1.4VDC		
V 10	6T8	#-.5VDC	#-1VDC	#-.5VDC	#6.3VAC	#0V	#0V	#0V	#-.7VDC	#85VDC
V 11	6K6GT	0V	#6.3VAC	#240VDC	#255VDC	#-11VDC	#-15VDC	#0V	135VDC	
V 12	12AU7	22VDC	5VDC	6.7VDC	0V	0V	75VDC	22VDC	20VDC	6.3VAC
V 13	6SN7GT	-135VDC -110VDC	255VDC	0V	-135VDC -110VDC	210VDC 37VDC	0V	6.3VAC	0V 42VDC	
V 14	6K6GT	0V	0V	380VDC	380VDC	0V	400VDC	6.3VAC	55VDC	
V 15	6AL5	-.1VDC	-.1VDC	6.3VAC	0V	7VDC	0V	-3.5VDC		
V 16	6SN7GT	1VDC	365VDC	17VDC	-18VDC -8VDC	220VDC	17VDC	6.3VAC	0V	
V 17	6BG6G	410VDC	0V	0V	0V	-25VDC	0V -6VDC	6.3VAC	235VDC	TOP CAP *
V 18	6W4GT	0V	0V	600VDC	400VDC	420VDC	0V	¶	¶	
V 19	1B3GT	* DO NOT MEASURE								
V 20	5U4G	¶	440VDC	0V	400VAC	0V	400VAC	¶	440VDC	
V 21	16TP4	0V	6.6VDC	PIN 10 420VDC	PIN 11 130VDC	PIN 12 6.3VAC				

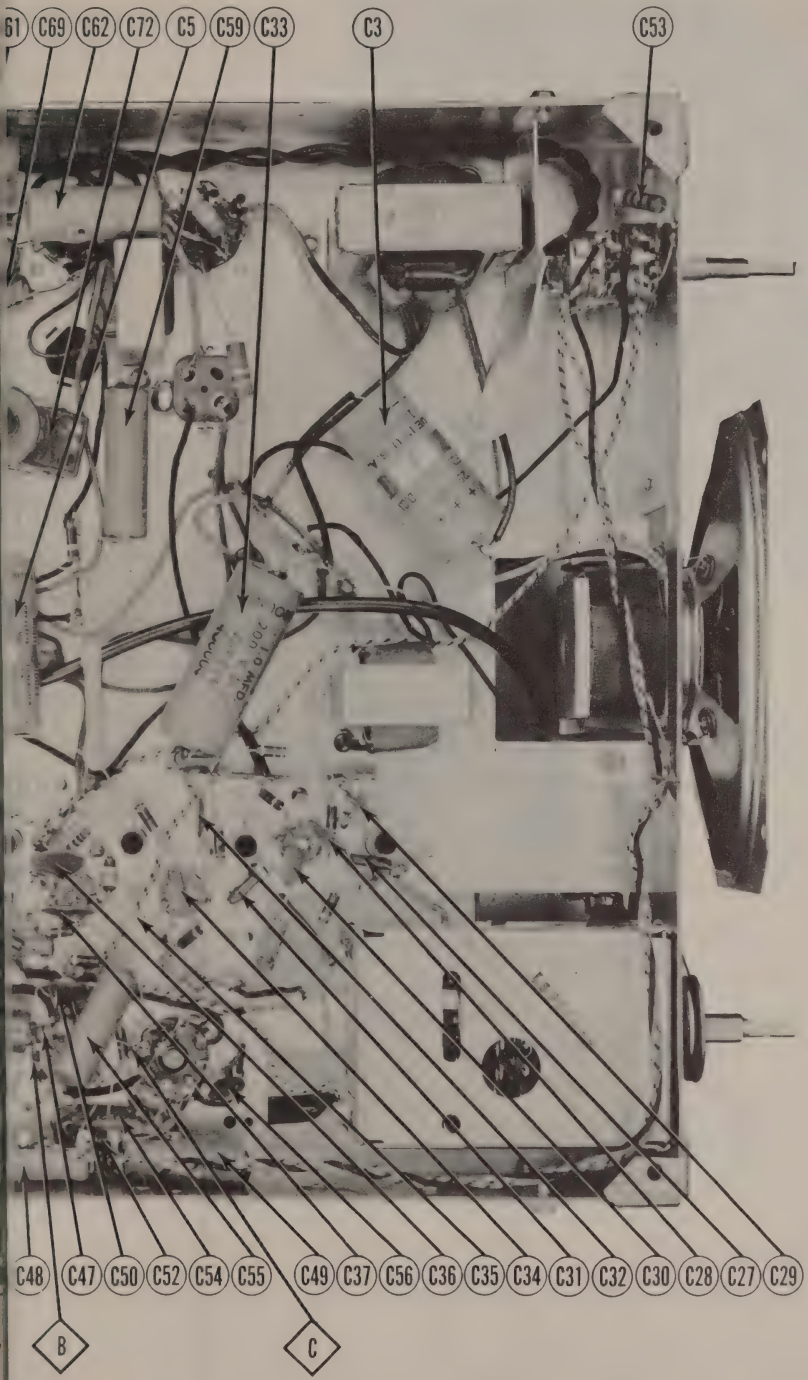
FOCUS CONTROL COUNTERCLOCKWISE
§ TAKEN WITH VACUUM TUBE VOLTMETER
# MEASURED FROM PIN 8 OF V11
* DO NOT MEASURE
¶ 6.3VAC MEASURED ACROSS FILAMENTS

RESISTANCE READINGS

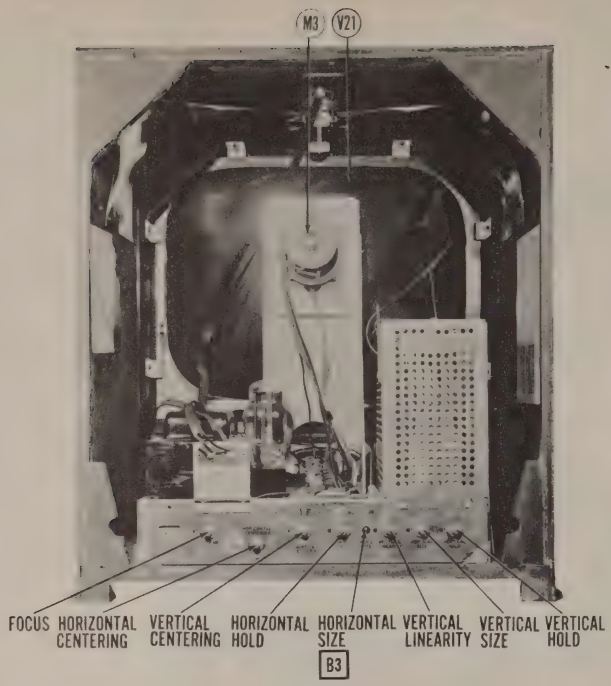
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	560KΩ	0Ω	.1Ω	0Ω	†12KΩ	†34KΩ	0Ω		
V 2	6AG5	1.1 Meg.	0Ω	0Ω	.1Ω	†4.7KΩ	†83KΩ	0Ω		
V 3	6C4	†11KΩ	Inf.	0Ω	.1Ω	†11KΩ	22KΩ	470Ω		
V 4	6AG5	560KΩ	0Ω	.9Ω	0Ω	#1KΩ	#1KΩ	0Ω		
V 5	6AG5	560KΩ	100Ω	.9Ω	0Ω	#1KΩ	#1KΩ	100Ω		
V 6	6AG5	3.8Ω	100Ω	.9Ω	0Ω	†4.7KΩ	#1KΩ	100Ω		
V 7	6AL5	8.2KΩ	330KΩ	1.6Ω	0Ω	0Ω	0Ω	.2Ω		
V 8	6AH6	8.3KΩ	0Ω	.1Ω	0Ω	†10KΩ	#0Ω	1.3KΩ		
V 9	6AU6	#.9Ω	#0Ω	#0Ω	#.1Ω	†33KΩ	†33KΩ	#270Ω		
V 10	6T8	Inf.	#13KΩ	Inf.	#.1Ω	#0Ω	#0Ω	#0Ω	#10 Meg.	†290KΩ
V 11	6K6GT	0Ω	#.1Ω	†735Ω	†300Ω	320KΩ	120KΩ	#0Ω	5KΩ	
V 12	12AU7	#820KΩ	150Ω	270KΩ	0Ω	0Ω	#8.6KΩ	#820KΩ	2.3KΩ	.1Ω
V 13	6SN7GT	820KΩ 1.8 Meg.	†220KΩ	0Ω	820KΩ 1.8 Meg.	†560KΩ †650KΩ	0Ω	.1Ω	0Ω	
V 14	6K6GT	0Ω	0Ω	†1.5KΩ	†1.5KΩ	4.7 Meg.	†300Ω	.1Ω	7.2KΩ 2.2KΩ	
V 15	6AL5	27KΩ	27KΩ	.1Ω	0Ω	1 Meg.	0Ω	1 Meg.		
V 16	6SN7GT	470KΩ	†5.7KΩ	1.5KΩ	100KΩ 150KΩ	▲235Ω	1.5KΩ	.1Ω	0Ω	
V 17	6BG6G	▲4.7KΩ	0Ω	0Ω	Inf.	1 Meg.	0Ω 50KΩ	.1Ω	▲95KΩ	TOP CAP ▲35Ω
V 18	6W4GT	Inf.	Inf.	Inf.	†300Ω	†100Ω	Inf.	Inf.	Inf.	
V 19	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ▲225Ω
V 20	5U4G	Inf.	50KΩ	Inf.	35Ω	Inf.	35Ω	Inf.	50KΩ	
V 21	16TP4	0Ω	270KΩ	PIN 10 †90Ω	PIN 11 220KΩ	PIN 12 .1Ω				

FOCUS CONTROL COUNTERCLOCKWISE
MEASURED FROM PIN 8 OF V11
† MEASURED FROM PIN 2 OF V20
▲ MEASURED FROM PIN 3 OF V18

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



AND ALIGNMENT IDENTIFICATION



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

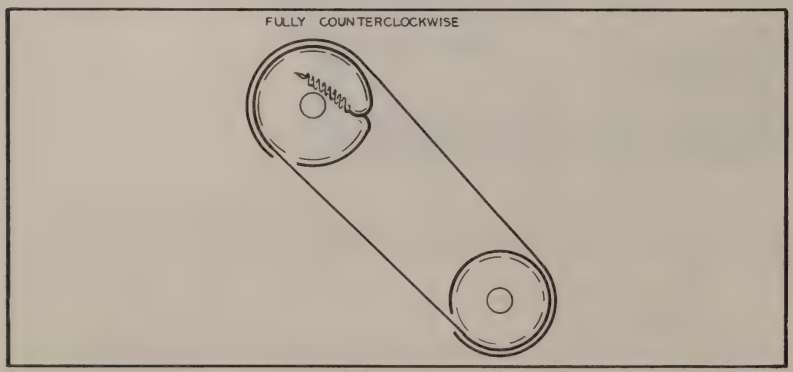
Turn the set on and tune in a TV station preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range, and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

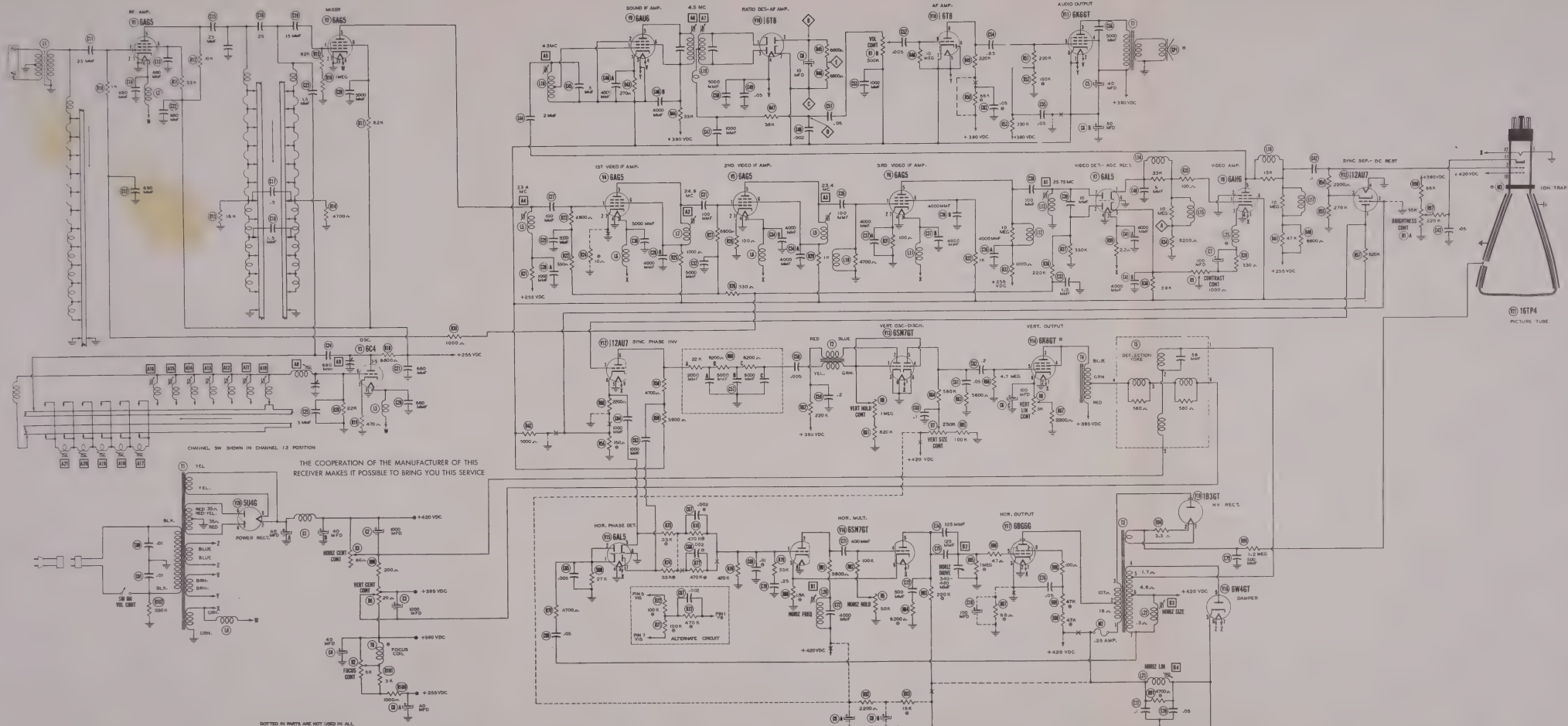
Connect a VTVM to pin 5 (Grid) of 6BG6G (V17) and adjust the horizontal drive trimmer (B2) for a -20 volts reading.

Adjust the horizontal size slug (B3) until the picture fills the mask horizontally.

Adjust the horizontal linearity slug (B4) for best linearity from left to right. If B3 and B4 are adjusted repeat the adjustment of B2 for -20 volts at the grid (pin 5) of V17.



CONTRAST CONTROL DRIVE CORD STRINGING



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	SEC.	REPLACEMENT DATA AIR LINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	185Ω	975Ω	22E55	A-8111 ①	A-3000 ① HVO-6	TBO-1 ①	Vert. Block Osc. Trans.
T3	225Ω Tap ④ 18Ω	6.6Ω Tap ④ .3Ω, 4.9Ω	22E57				Hor. Output Trans.
T4	1100Ω Tap ④ 18Ω		22E51	A-8123	A-3037		Vert. Output Trans.
T5A	13Ω		30K104	DY-7	MD-70		Hor. Deflection Coil
B	62Ω						Vert. Deflection Coil
T6	2950Ω		22E102				Focus Coil
			22E102-3				Alternate Focus Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

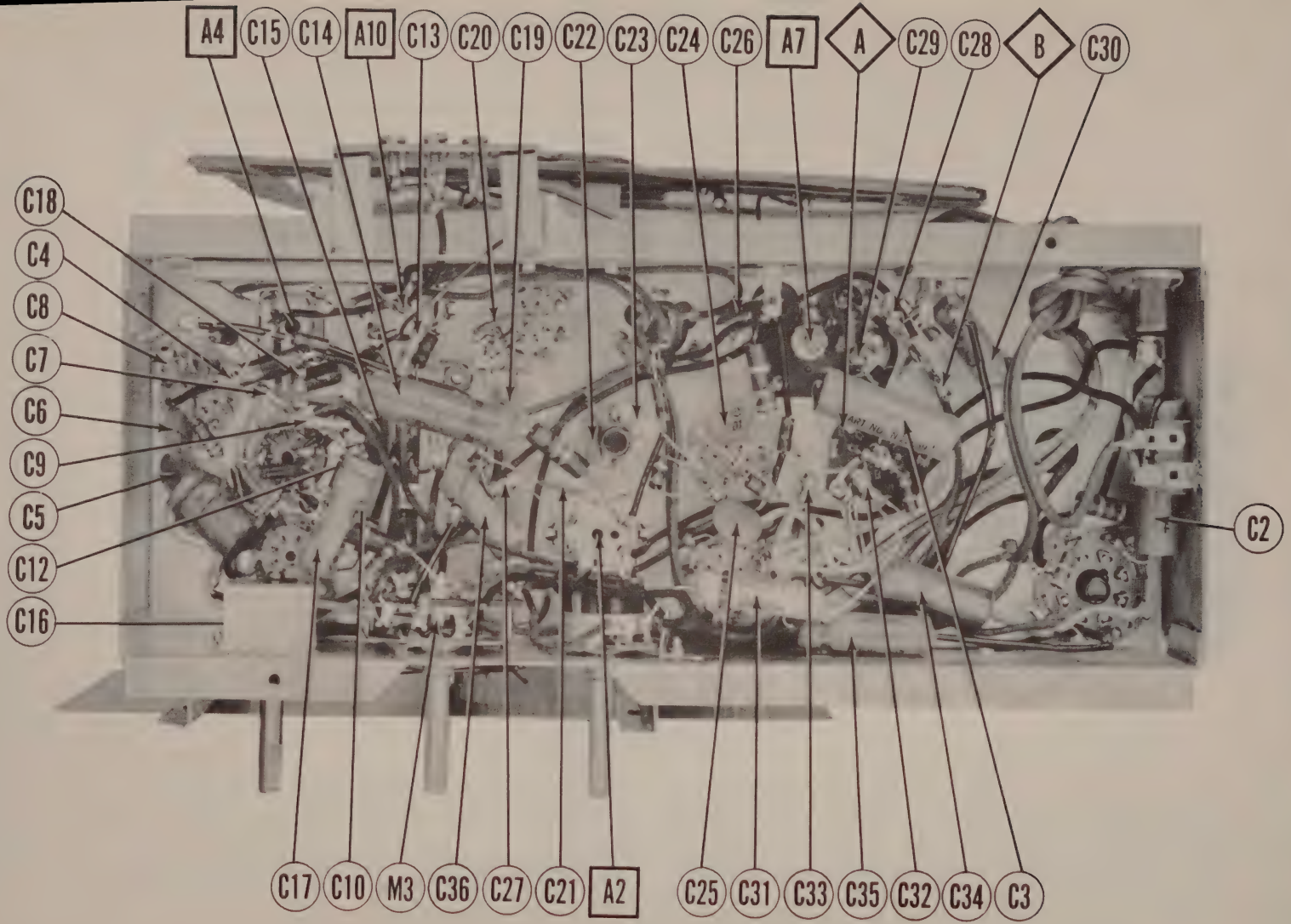
ITEM No.	RATING IMPEDANCE PRI.	SEC.	DC RES. PRI.	SEC.	REPLACEMENT DATA AIR LINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	6400Ω	4.2Ω	435Ω	.7Ω	22E35-2	A-3878	A-2931	RO-13	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	SEC.	REPLACEMENT DATA AIR LINE PART No.	MEISSNER PART No.	IRC PART No.	NOTES
L1	Ant. Trans.	.1Ω	.1Ω	*			* Part of tuner #20E519
L2	Fil. Choke	0Ω		*			
L3	Fil. Choke	0Ω		*			
L4	Fil. Choke	.1Ω		2E78			
L5	1st Video IF	.2Ω		20E360			
L6	Fil. Choke	.9Ω		2E82		CLA-1.5	1.5 microhenries
L7	2nd Video IF	.2Ω		20E360			
L8	Fil. Choke	.9Ω		2E82		CLA-1.5	1.5 microhenries
L9	3rd Video IF	.2Ω		20E360			
L10	Grid Choke	3.8Ω		20E363-9			Wound on 4.7KΩ resistor.
L11	Fil. Choke	.9Ω		2E82		CLA-1.5	1.5 microhenries
L12	RF Choke	3.6Ω		20E363-8			Wound on 10 Meg. resistor.
L13	4th Video IF	.2Ω		20E360			
L14	Peaking	8.5Ω		20E363-2			Wound on 33KΩ resistor
L15	Peaking	25Ω		20E363-6			Wound on 10 Meg. resistor
L16	Peaking	13Ω		20E363-3			Wound on 15KΩ resistor
L17	Peaking	18Ω		20E363-10			Wound on 10 Meg. resistor
L18	1st Sound IF	2.8Ω		20E361			Tap at .9Ω
L19	Ratio Det. Trans.	3.8Ω	.8Ω	20E537			
L20	Horiz. Freq.	50Ω		20E409			
L21	Horiz. Lin.	15Ω		20E524			
L22	Horiz. Size	.1Ω		20E415			
L23	Cath. Chk.	.9Ω		2E82		CLA-1.5	1.5 microhenries, not used in all models.

MISCELLANEOUS

ITEM No.	PART NAME	AIR LINE PART No.	NOTES
M1	RF Tuner	20E519-3	
M2	Fuse	46E8	.25A 250V Type 3AG
M3A	Ion Trap	53K174-3	On Picture Tubes For Using Focus Coil #2E102
B	Ion Trap	53K174-2	On Picture Tubes For Using Focus Coil #2E102-3
	Trimmer	24K18	Horiz. Drive 340-460MMF
	Safety Glass	8K33	
	Knob	37E49	Channel Selector
	Knob	37E69-2	Volume
	Knob	37E52	Contrast
	Knob	37E68-2	Brightness
	Knob	37E62	Antenna
	Antenna Trimmer	30K154	Includes 9" Shaft Assembled To Trimmer


A4
C15
C14
A10
C13
C20
C19
C22
C23
C24
C26
A7
A
C29
C28
B
C30
C18
C4
C8
C7
C6
C9
C5
C12
C16
C2
C17
C10
M3
C36
C27
C21
A2
C25
C31
C33
C35
C32
C34
C3

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	FM RF Amp.	6BA6	6BA6	7BK	
V2	FM Converter	12AT7	12AT7	9A	
V3	AM Converter	6BE6	6BE6	7CH	
V4	1st FM-AM IF Amp.	6BA6	6BA6	7BK	
V5	2nd FM IF Amp.	6BA6	6BA6	7BK	
V6	Ratio Det. -DET. - AVC-AF	6T8	6T8	9E	
V7	Power Output	6V6GT	6V6GT	7AC	
V8	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	250	N22806	AF844F		UP42225		TVL-3540	■ Filter
B	20	250							▲ Filter
C	20	250							Filter
C2	10	25	N22602	PRS25/10		BR102A		TVA-1204	Output Cath. Byp.
C3	4	25	N22659	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C4	47			SI47	D6-470	5W5Q5	GP1K-47	19C25	Ant. Coupling
C5	10000			BPD-01	DD-103	PTE4S1	811-01	36C1	FM RF Screen
C6	5000			BPD-005	DD-502	1D5D5	811-005	29C1	FM RF Cathode
C7	100			SI100	D6-101	5W5T1	GP1K-100	19C11	RF Coupling
C8	1000			SI1000	D6-102	1W5D1	GP2L-001	19C1	FM RF Decoupling
C9	1000			SI1000	D6-102	1W5D1	GP2L-001	19C1	FM Conv. Cathode
C10	51			SI50	D6-500	5W5Q5	GP1K-51	19C28	Osc. Grid Cap.
C11	1.5			SI1.5NPO	TCZ-1.5		NPOK-1.5		Osc. Coupling
C12	1000			SI1000	D6-102	1W5D1	GP2L-001	19C1	Osc. Plate Byp.
C13	1000			SI1000	D6-102	1W5D1	GP2L-001	19C1	FM Conv. Plate Dec.
C14	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C15	5000			BPD-005	DD-502	1D5D5	811-005	29C1	AVC Filter
C16	47			SI47	D6-470	5W5Q5	GP1K-47	19C25	Osc. Grid Cap.
C17	.01	400		P488-01	D6-103	PTE4S1	811-01	4TM-S1	Osc. Anode Byp.
C18	1000			SI1000	D6-102	1W5D1	GP2L-001	19C1	AVC Filter
C19	10000			BPD-01	DD-103	PTE4S1	811-01	36C1	1st IF Screen
C20	5000			BPD-005	DD-502	1D5D5	811-005	29C1	1st IF Cath.
C21	5000			BPD-005	DD-502	1D5D5	811-005	29C1	1st IF Dec.
C22	22				TCZ-22		NPOK-22	29C12	Fixed Trimmer
C23	15			SI15	D6-150		GP1K-15	19C22	IF Coupling
C24	10000			BPD-01	DD-103	PTE4S1	811-01	36C1	2nd IF Screen
C25	5000			BPD-005	DD-502	1D5D5	811-005	29C1	2nd IF Cath.
C26	5000			BPD-005	DD-502	1D5D5	811-005	29C1	2nd IF Dec.
C27	100			SI100	D6-101	5W5T1	GP1K-100	19C11	Diode RF Filter
C28	100			SI100	D6-101	5W5T1	GP1K-100	19C11	Diode Load Cap. *
C29	100			SI100	D6-101	5W5T1	GP1K-100	19C11	Diode Load Cap. *
C30	.003	600		P688-302	D6-302	PTE6D3	GP2M-003	6TM-D3	De-emphasis
C31	.01	400		P488-01	D6-103	PTE4S1	811-01	4TM-S1	Audio Coupling
C32	220			SI220	D6-221	5W5T25	GP2K-220	19C13	AF Amp. Grid
C33	100			SI100	D6-101	5W5T1	GP1K-100	19C11	AF Amp. Plate
C34	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C35	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Output Plate Byp.
C36	.01	600		P688-01	D6-103	PTE6S1	811-01	6TM-S1	Line Filter

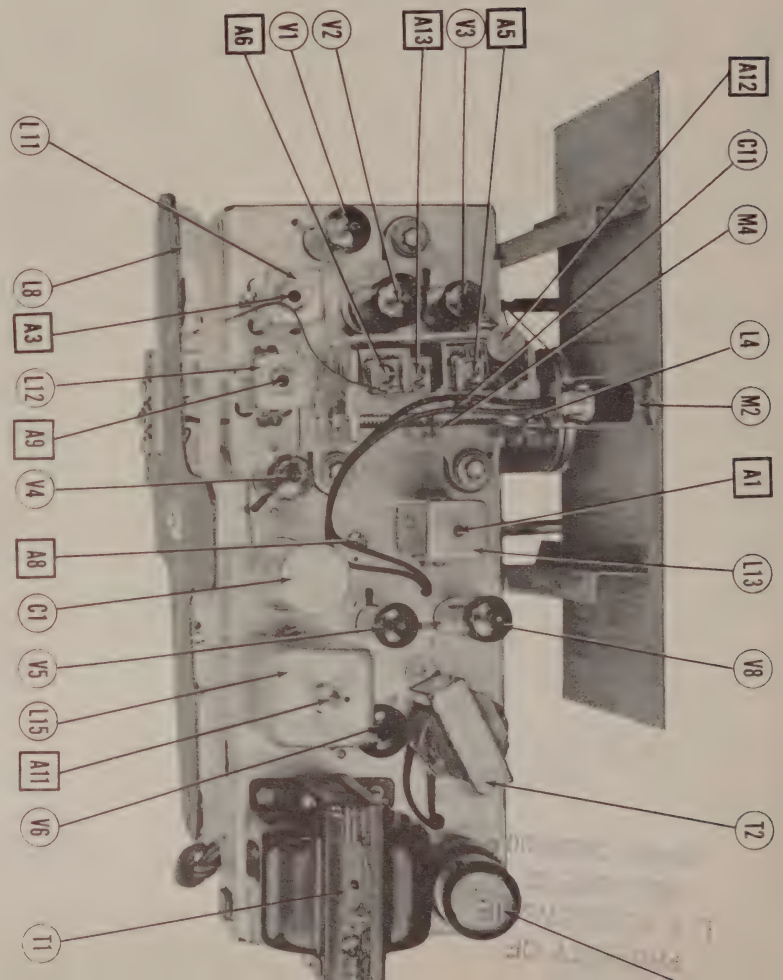
* When either items C28 or C29 are replaced, replace both with capacitors of equal value.

CONTROLS

ITEM	RATING	REPLACEMENT DATA	INSTALLATION NOTES

SET 117

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ARVIN PART No.	IRC PART No.	
R2	68Ω	½			FM RF Amp. Cathode
R3	27KΩ	1		BTA-27K	FM RF Amp. Screen
R4	1000Ω	½		BTS-1000	FM RF Amp. Decoupling
R5	2200Ω	½		BTS-2200	FM Converter Cathode
R6	1000Ω	½		BTS-1000	FM Converter Plate Decoupling
R7	22KΩ	½		BTS-22K	FM Osc. Grid
R8	1000Ω	½		BTS-1000	FM Osc. Plate
R9	47Ω	½			Parasitic Supp.
R10	22KΩ	½		BTS-22K	AM Conv. Grid
R11	8200Ω	1		BTA-8200	Osc. Anode
R12	1 Meg.	½		BTS-1 Meg.	AVC Network
R13	68Ω	½			1st IF Amp. Cathode
R14	10KΩ	1		BTA-10K	1st IF Amp. Screen
R15	1000Ω	½		BTS-1000	1st IF Amp. Decoupling
R16	100KΩ	½		BTS-100K	2nd FM IF Amp. Grid
R17	68Ω	½			2nd FM IF Amp. Cathode
R18	3300Ω	1		BTA-3300	2nd FM IF Amp. Screen
R19	1000Ω	½		BTS-1000	2nd FM IF Amp. Decoupling
R20	15KΩ	½		BTS-15K	Diode Load
R21	180Ω	½		BTS-180	Balancing
R22	39KΩ	½		BTS-39K	De-emphasis
R23	1 Meg.	½		BTS-1 Meg.	AVC Network
R24	220KΩ	½		BTS-220K	AVC Network
R25	100KΩ	½		BTS-100K	AVC Network
R26	10 Meg.	½		BTS-10 Meg.	AF Amp. Grid
R27	330KΩ	½		BTS-330K	AF Amp. Plate
R28	470KΩ	½		BTS-470K	Output Grid
R29	270Ω	1		BTA-270	Output Cathode
R30A	500Ω	5	N22624		Filter-Wire Wound
B	500Ω				Filter-Wire Wound

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .38A	390VCT .055ADC	6.3VAC @ 3.3A		N22959			PV-70 ①

① Drill one mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	5000Ω	3.3Ω	280Ω	.4Ω	N23669	A-3877	A-2930	RO-9 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ARVIN PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD	V. C. IMP.	N23406	ST-108 MOD. P6-X	6A15	
	PM	3.3Ω				
SP2	CONE DIA.	V. C. DIA.				
	5 7/8"	9/16"				

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	ARVIN PART No.	MEISSNER PART No.
L1	FM Ant. Loading Coil	.1Ω		N-22648-1	
L2	RF Choke	.6Ω		N-21445-1	
L3	FM RF Coil	0Ω		N-22593	
L4	FM Osc. Coil	0Ω		N-22594	
L5	Cath. Chk.	.2Ω		N-22597-1	
L6	Para. Supp.	0Ω		N-22335-1	
L7	Fil. Choke	1.2Ω		N-21873	
L8	Loop Ant.	0Ω	2Ω	N-22586	
L9	AM Osc.	.7Ω	7.8Ω	N-22587-1	
L10	Para. Supp.	0Ω		N-22334-1	
L11	1st AM IF	12Ω	10Ω	N-22352-1	16-6758
L12	1st FM IF	1Ω	1Ω	N-22590	16-3487
L13	2nd AM IF	12Ω	10Ω	N-22352-1	16-6758
L14	2nd FM IF	.5Ω		N-22967	
L15	Ratio Det. Trans.	1Ω	.1Ω	N-22592	

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA					REMARKS
	ARVIN PART No.	ASTATIC PART No.		SHURE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		GC-AG-J	G-AG			

ASTATIC NEEDLE LISTING ABOVE IS SPECIFIED FOR THE ASTATIC REPLACEMENT CARTRIDGE LISTED.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					ARVIN PART No.		
M2	Bayonet	6-8	.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M3	Switch	N23485	AM-FM-Phono
M4	2 Gang Var. Cap.	N22962	(31-452MMF, 13-162MMF)
	Dial Pointer	N22956-1	
	Dial Scale	N23429	
	Knob	N23450-1C	On/Off-Volume
	Knob	N23450-1D	AM-FM-Phono
	Knob	N23450-1A	Tuning

FIRESTONE
MODELS 4-A-78, 4-A-79

FIRESTONE
MODELS 4-A-78, 4-A-79

FIRESTONE MODEL 4-A-78

TRADE NAME	Firestone, Models 4-A-78, 4-A-79 (Code No. 291-0-675)
SUPPLIER	Firestone Tire and Rubber Co., Akron, Ohio
TYPE SET	AC-DC Operated Superheterodyne Receiver With Loop Antenna
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC- AF, 50B5 Power Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC — RATING .27 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1700KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer if available. If not connect a.1MFD capacitor in series with low side of signal generator and chassis. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjustments.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.02MFD	High side to stator on rear section of tuning gang. Low side to chassis.	455KC (400 ∿Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1700KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune for max. Output	"	A6	"

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 1, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

FIRESTONE MODEL 4-A-78

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7CK	
V3	Det.-AVC-AF	12AT6	12AT6	7BT	
V4	Power Output	50B5	50B5	7CV	
V5	Rectifier	35W4	35W4	5BR	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	24E24	PRS150/50-50		EDL5515		TVA2453	Filter - Yellow
B	50	150							Filter - Red
C2	.05	200	23E216	P288-05	DF-503	PTE455		2TM-S5	AVC Filter
C3	250	500	23E42	1468-00025	D6-251	5W5T25	GP2K-250	1FM-325	RF Coupling
C4	250	500	23E42	1468-00025	D6-251	5W5T25	GP2K-250	1FM-325	Diode RF Filter
C5	.01	200	23E211	P488-01	D6-103	PTE4S1	821-01	4TM-S5	Audio Coupling
C6A	250		* 23E2023	SI220	D6-251	5W5T25	GP2K-250	1FM-325	AF Amp. Plate Bypass
B	10000			BPD-01	DD-103	PTE4S1	821-01	36C1	Audio Coupling
C7	.01	600	23E411	P688-01	D6-103	PTE6S1	821-01	6TM-S1	Output Plate Bypass
C8	.2	400	23C2021	P488-22		GT4P2		72P53	Line Insolation
C9	.05	400	23E416	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter

* Items C6A, C6B, R6A, and R6B are combined into one unit.

CONTROLS

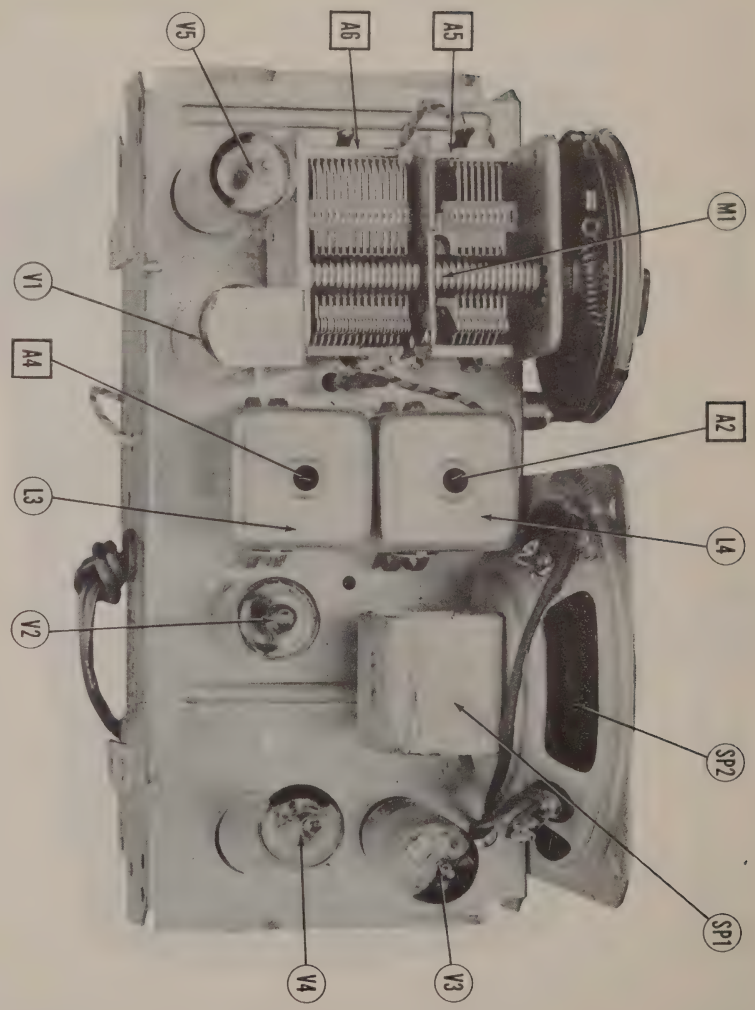
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ		28E27	Q13-133	AG-60-Z	BSK-60-S	Volume control.
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions.
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	1 Meg.		27E105	BTS-1Meg.	Converter grid.
R3	22KΩ		27E223	BTS-22K	OSC. Grid
R4	3.3 Meg.		27E335	BTS-3.3 Meg.	AVC Network
R5	3.3 Meg.		27E335	BTS-3.3 Meg.	AF Amp. Grid
R6A	250KΩ		23E2023 *	BTS-250	AF Amp Plate
B	500KΩ			BTS-500K	Output Grid
R7	150Ω		27E151	BTS-150	Output Cathode
R8	2200Ω	1	27E222-3	BTA-2200	Filter

* Items C6A, C6B, R6A, and R6B are combined into one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		FIRESTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	3000Ω	3Ω	180Ω	.4Ω	22E49	A-3328	A-3025	RO-2①	① Drill new mounting holes.

SPEAKER

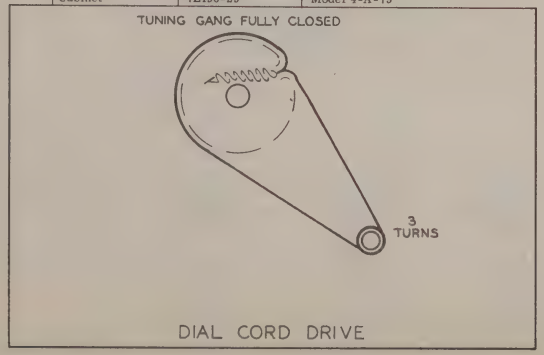
ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	FIRESTONE PART No.	VIKING PART No.	QUAM PART No.	
SP1	PM	3Ω	1E32	35J4	3AO7	
	CONE DIA.	V. C. DIA.				
SP2	3 1/2"	9/16"				

COILS (RF-IF)

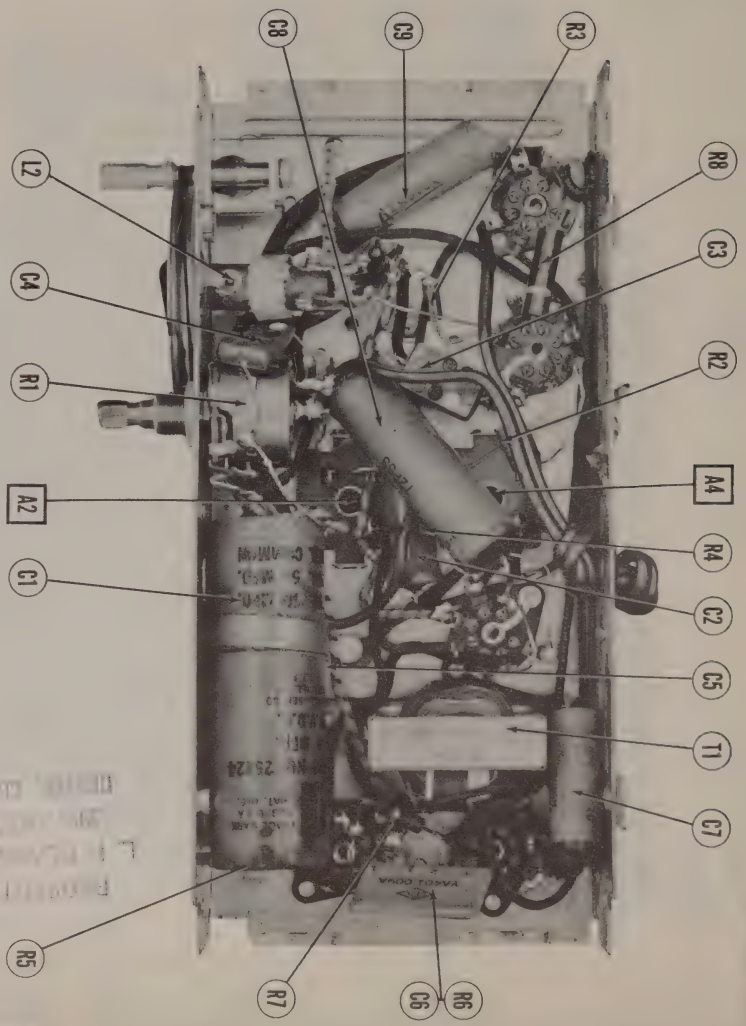
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	FIRESTONE PART No.	MEISSNER PART No.	
L1	Loop Ant.	2.8Ω		64E27		Includes cabinet back.
L2	OSC. Coil	1Ω	8.8Ω	20E346	14-1073	
L3A	1st IF	19Ω	19Ω	20E402	16-6666	
B	1st IF			20E378		
L4A	2nd IF	19Ω	19Ω	20E402	16-6667	
B	2nd IF			20E378		

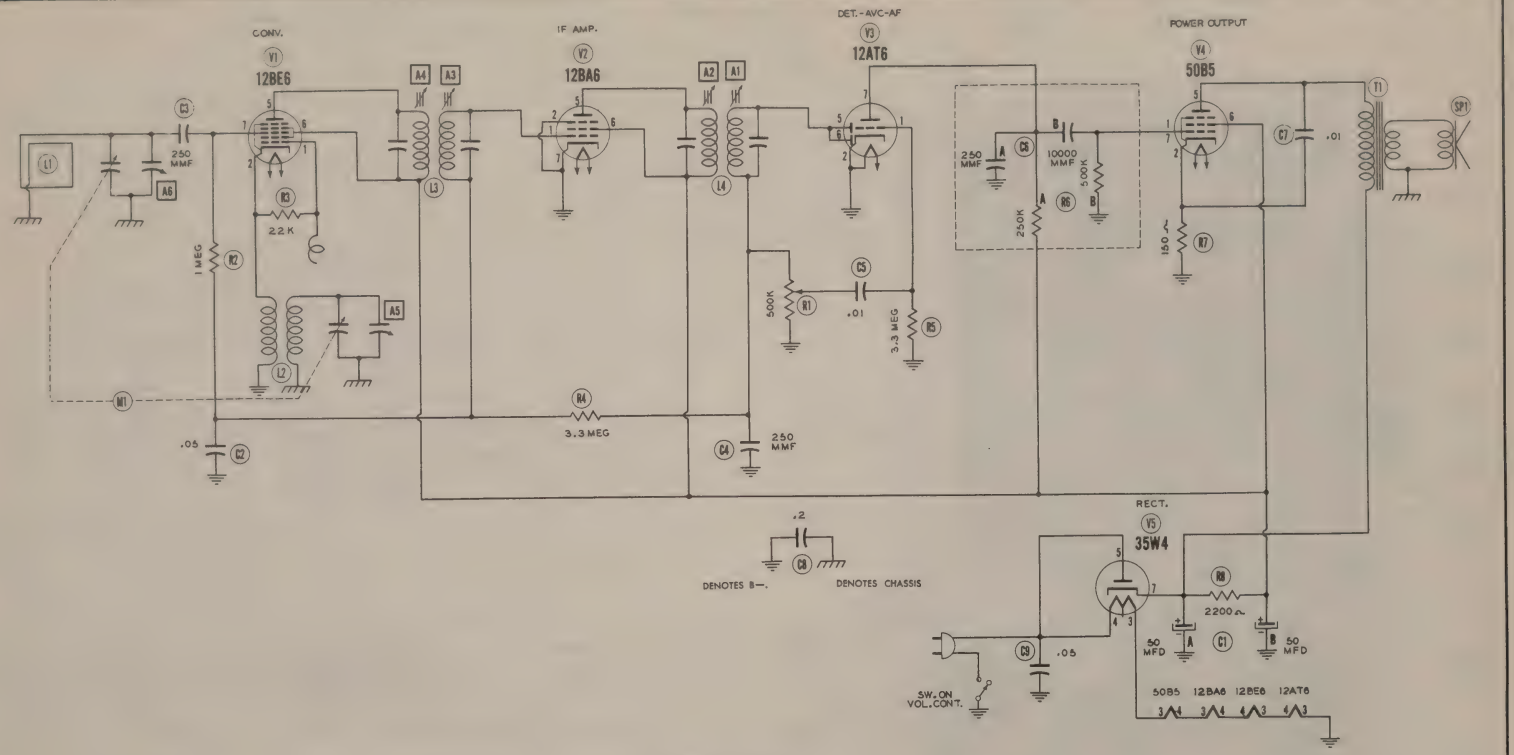
MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M1	2Gang Var. Cap.	24E45	(30-450 MMF, 22-159MMF
	Dial Pointer	35E27-2	
	Knob	37E52-12	Model 4-A-78
	Knob	37E52-14	Model 4-A-79
	Dial Scale	36E50	
	Cabinet	7E196-22	Model 4-A-78
	Cabinet	7E196-29	Model 4-A-79



CHASSIS—BOTTOM VIEW





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VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	§-5.7VDC	0V	12VAC	24VAC	80VDC	80VDC	-.3VDC
V 2	12BA6	-.7VDC	0V	35VAC	24VAC	80VDC	80VDC	0V
V 3	12AT6	-.7VDC	0V	0V	12VAC	-.7VDC	-.7VDC	40VDC
V 4	50B5	.1VDC	5.8VDC	87VAC	35VAC	120VDC	80VDC	.1VDC
V 5	35W4	0V	0V	87VAC	117VAC	117VAC	110VAC	125VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1Ω	12Ω	24Ω	†2.2KΩ	†2.2KΩ	4.8 Meg.
V 2	12BA6	3.8 Meg.	0Ω	36Ω	24Ω	†2.2KΩ	†2.2KΩ	0Ω
V 3	12AT6	3.3 Meg.	0Ω	0Ω	12Ω	500KΩ	500KΩ	†250KΩ
V 4	50B5	500KΩ	150Ω	85Ω	36Ω	†180Ω	†2.2KΩ	500KΩ
V 5	35W4	Inf.	Inf.	85Ω	120Ω	120Ω	110Ω	120KΩ

MEASURED FROM PIN 7 OF V5

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MASCO
MODEL MU-5

MASCO
MODEL MU-5

MASCO MODEL MU-5

TRADE NAME	Masco, Model MU-5
MANUFACTURER	Mark Simpson Mfg. Co., Inc., 32-28 49th St., Long Island City, New York
TYPE SET	AC Operated Musical Instrument Amplifier.
TUBES (Three)	Types 6SL7GT AF Amp., 6V6GT Power Output, 6X5GT Rectifier
POWER SUPPLY	110-120 Volts AC
RATING	.31 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

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PARTS LIST AND DESCRIPTIONS

MASCO MODEL MU-5

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MASCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	AF Amp.	6SL7GT	6SL7GT	8BD	
V2	Power Output	6V6GT	6V6GT	7AC	
V3	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MASCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	10	475	•	AF444J		UP22245		TVL-3780	■ Filter ▲ Filter Decoupling
B	10	475							
C	10	475							
C2	16	450	•	PRS450/16		BR1645A		TVA-1708	Filter
C3	10	50		PRS50/10		BR105		TVA-1304	Output Cathode
C4	.005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C5	.005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	Tone Compensation
C6	.005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C7	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Line Filter

*Items C1A, C1B, C1C, and C2 may be combined into one unit (20-20-10 Mfd) in some sets.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	33-010-188	Q13-133	AM-60-Z	B-60	Volume Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R1A per instructions
R2A	500KΩ	½	33-010-188	Q13-133	AM-60-Z	B-60	Tone Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R1A per instructions

RESISTORS

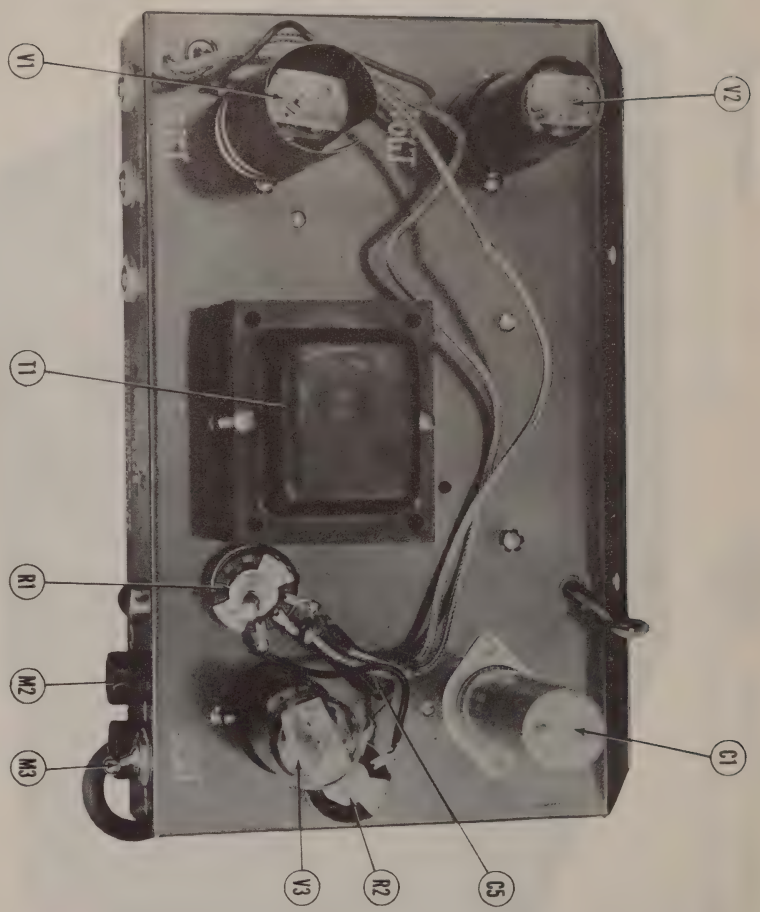
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	IDENTIFICATION CODES
R3	100KΩ	½		BTS-100K	Series Instruments
R4	1.5 Meg	½		BTS-1Meg	1st AF Amp. Grid
R5	1000Ω	½		BTS-1000	1st AF Amp. Cathode
R6	100KΩ	½		BTS-100K	1st AF Amp. Plate
R7	1000Ω	½		BTS-1000	2nd AF Amp. Cathode
R8	100KΩ	½		BTS-100K	2nd AF Amp. Plate
R9	27KΩ	½		BTS-27K	Decoupling
R10	250KΩ	½		BTS-270K	Output Grid
R11	270	2		BW-2-270	Output Cathode
R12	15KΩ	½		BTS-15K	Feedback
R13	8200Ω	1		BTA-8200	Filter

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117 VAC @ .31 A	500 VCT .045 ADC	6.3 VAC @ 1.9A		P-5	PM-8419①	P-3047①	PH-50①

① Drill New Mtg. Holes

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	5000Ω	3.7Ω 8Ω	430Ω	.4Ω .6Ω	T-5	A-3825		RO-9②	② Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	MASCO PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.7Ω		ST-115 Mod. P8-V	8A21	
	CONE DIA.	V. C. DIA.				
SP2	7-3/4"	9/16"				

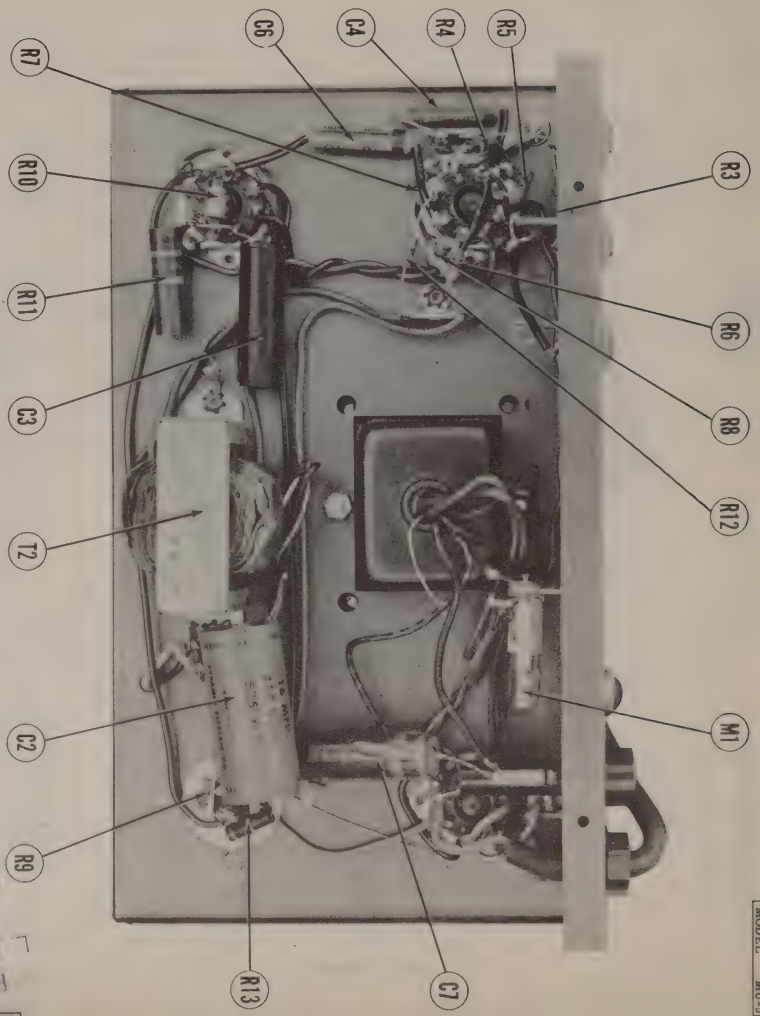
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MASCO PART No.		
M1	Bayonet	6-8	.15	Brown			Type Number 47

MISCELLANEOUS

ITEM No.	PART NAME	MASCO PART No.	NOTES
M2	Fuse		1 Amp. Type 3AG
M3	Switch		On-Off

CHASSIS—BOTTOM VIEW



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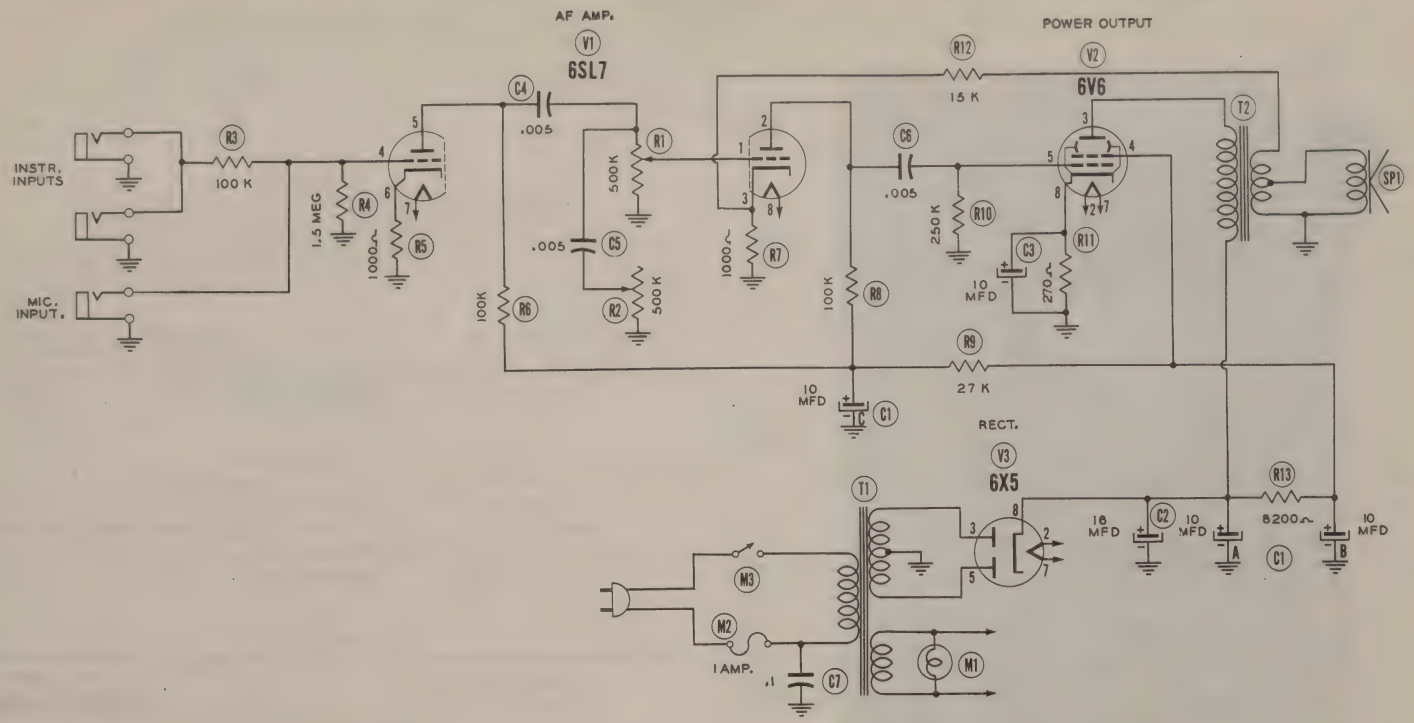
MASCO
MODEL MU-5

MASCO
MODEL MU-5



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SL7GT	0V	215VDC	.9VDC	-.2VDC	215VDC	.9VDC	¶	¶
V 2	6V6GT	0V	¶	260VDC	215VDC	0V	275VDC	¶	11VDC
V 3	6X5GT	0V	¶	245VAC	117VAC	245VAC	0V	¶	275VDC

¶ 6.3 VAC MEASURED ACROSS FILAMENTS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SL7GT	0Ω	†135KΩ	1KΩ	1.5Meg.	†135KΩ	1KΩ	270Ω	270Ω
V 2	6V6GT	0Ω	270Ω	†430Ω	†8.2KΩ	270KΩ	†0Ω	270Ω	270Ω
V 3	6X5GT	Inf.	270Ω	160Ω	Inf.	160Ω	Inf.	270Ω	65KΩ

† MEASURED FROM PIN 8 OF V3

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at minimum, no signal applied for voltage measurements.

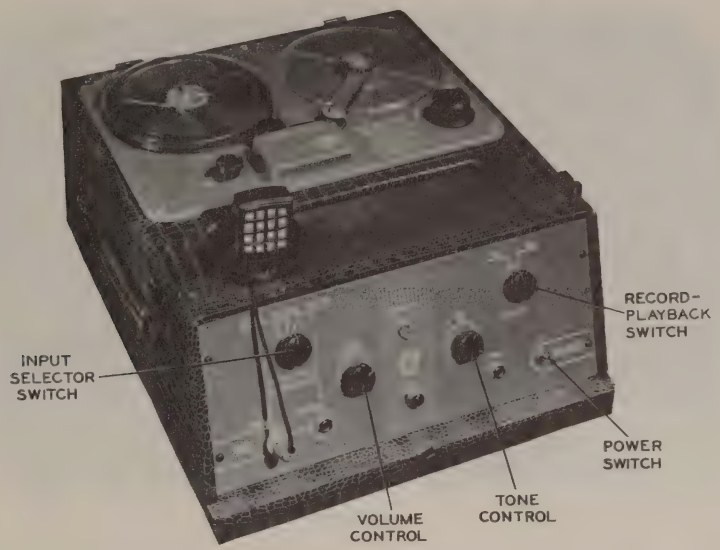

Figure 1

GENERAL INFORMATION

The Masco Model 375 Tape Recorder is designed to magnetically record on a standard 7" reel, .248" width ribbon. The capstan and balanced flywheel provides constant tape speed of 3.75 inches per second - one hour of playing time to a standard reel. The mechanism is equipped with a fast-forward or fast-rewind speed, requiring 2-1/2 minutes each.

A monitor jack is provided for plugging in head phones in listening to a recording. The unit has two input channels - Microphone and Radio-Phono, and two amplifier controls - Volume and Tone.

This recorder will record from Microphone, Radio or Phonograph, and will also operate as a P. A. System.

Provisions are also made for using a larger external speaker. The internal speaker is automatically disconnected when used with external speaker.

Operating power is from 105 to 125 volts, 60-cycle AC. Operation on any other voltage or frequency will result in serious damage and/or improper operation.

Manufactured by:

Mark Simpson Manufacturing Co.,
32-28 Forty-Ninth Street
Long Island City 3, New York

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HOWARD W. SAMS & CO., INC., INDIANAPOLIS, INDIANA

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MASCO
MODEL 375

MASCO
MODEL 375

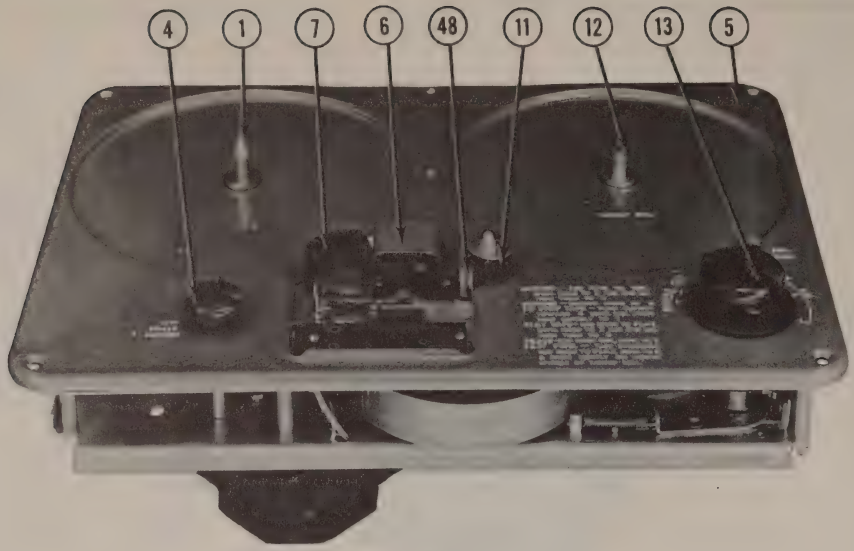


Figure 2

OPERATION

To Prepare the Masco for Recording -

1. Insert the line cord plug into a convenient wall receptacle of the proper rating.

2. Turn the red knob (4) to the "Play" position.

3. Turn knob (13) to the position marked "Motor Off."

4. Place a full reel of tape on the left spindle (1) so the tape will unwind counterclockwise. Make sure the reel engages key on spindle.

5. Place takeup reel on right spindle (12). Make sure reel engages key on spindle.

6. Pull a sufficient amount of tape from the supply reel to go through the slot between the Erase and Record Heads and felt facings, and between capstan and idler wheel. The dull coating of the tape should face the two heads.

7. Place the end of the tape in slot on the takeup reel and revolve takeup reel, by hand, counterclockwise until tape is engaged.

8. Turn the main switch (power switch) to "On."

9. Turn Playback - Record switch to "Record."

10. Turn Input Selector switch to "Microphone."

11. Screw connector on microphone cable onto chassis connector marked "Microphone Input."

12. Rotate Tone Control to Maximum (clockwise) position.

13. Hold microphone firmly in hand (do not hold it by the cable) and talk into it from a distance of about 6". Adjust Volume Control clockwise until the Recording Level indicator flashes occasionally. Too much volume may result in distorted recordings.

14. A speaker or head phone may be plugged into the "Monitor" jack to check the recording.

15. The "MASCO" is now ready to record.

Recording -

After the unit has been prepared for recording, the following procedure is necessary to make a recording.

1. Turn the red knob (4) to the "On" position and the brown knob (13) to "2" for five seconds, then turn to "3." The machine is now recording.

Rewind -

To rewind the tape, turn the brown knob (13) to "5."

To Stop Tape -

To stop the tape when rewinding, turn the brown knob (13), slowly, to "4" until reel stops, then quickly to "1."

To Play a Recording -

1. Turn the red knob (4) to "Play." This is important since leaving red knob in "On-Erase-Record" will cause the program to be erased.

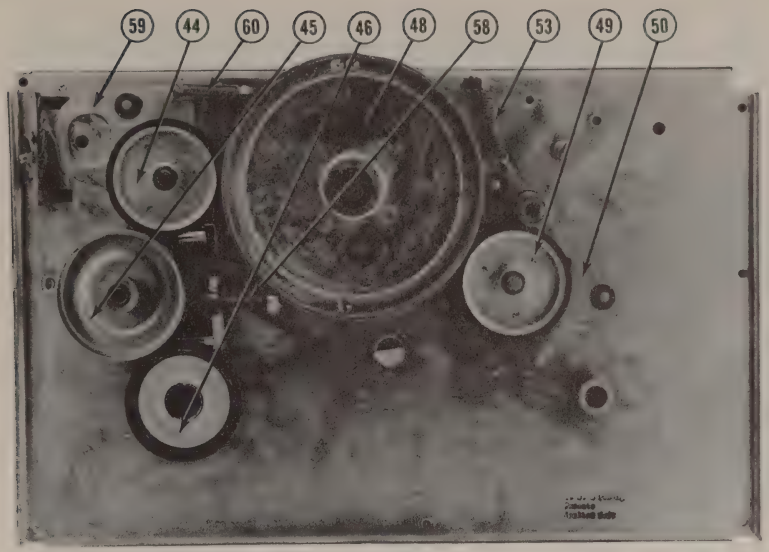


Figure 3

2. Turn "Input Selector" switch to "Tape-Playback."

3. Turn "Record-Playback" switch to "Playback."

4. Turn main switch to "On."

5. Turn brown knob to "2" for five seconds, then turn to "3."

6. Adjust Volume and Tone Controls to suit.

Fast-Forward Speed -

Fast-Forward speed may be accomplished by turning the red knob (4) to "Play," brown knob (13) to "4," and then press lightly on the center spindle (12) of the takeup reel. By turning the brown knob (13) to Station 4, the recording head pressure pad (22) is moved slightly away from the tape and the capstan pressure wheel (11) is pivoted away from the capstan, thus relieving the friction from the tape. By pressing on the center of the spindle (12), a positive frictional condition is set up by items (42, 43, and 44), thus giving the Fast-Forward speed.

To Record From Radio or Phonograph -

1. The "Input Selector" switch is turned to "Radio-Phono."

2. Turn "Playback-Record" switch to "Record."

3. Turn red knob (4) to "Record."

4. Rotate the tone control to maximum (clockwise) position.

5. Insert the radio or phono plug into the input marked "Radio-Phono."

6. Turn Master Switch to "On."

7. After Master Switch is turned on, allow the unit to warm up (15 seconds): then adjust the "Volume" control until the "Recording Level" indicator lights occasionally.

CAUTION: Too much volume may result in distorted recordings.

8. Turn brown knob (13) to "2" for 5 seconds; then to position "3." The mechanism is now recording.

To Operate as a "P. A." System -

1. For Microphone:

   (a) Turn the Main Switch "On."

   (b) Plug microphone into "Input" marked "Microphone."

   (c) Rotate "Input Selector" switch to "Microphone."

   (d) Turn "Playback-Record" switch to "Playback."

   (e) Adjust the Volume and Tone controls to the desired volume and tone.

2. For Radio or Phonograph:

   (a) Turn Main Switch "On."

   (b) Plug radio or phonograph into input marked "Radio-Phono."

   (c) Rotate "Input Selector" switch to "Radio-Phono" position.

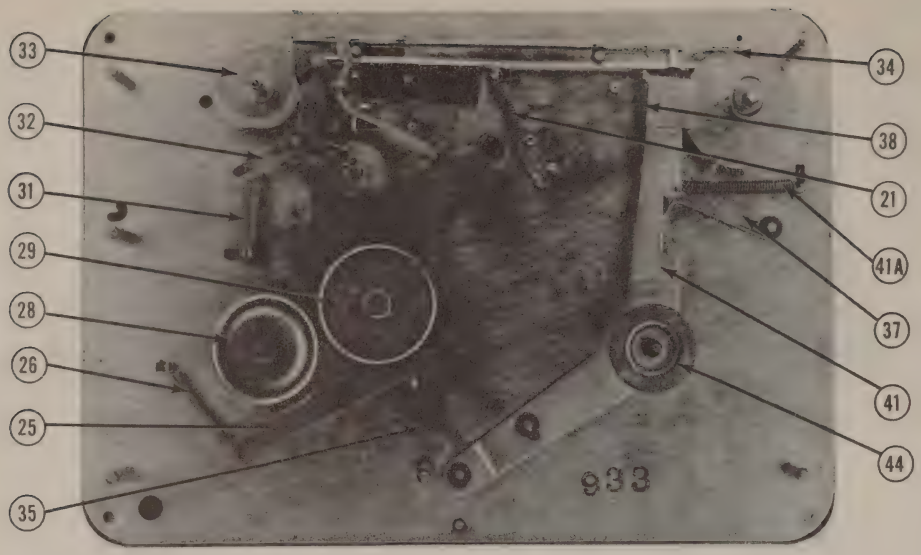


Figure 4

(d) Turn "Playback-Record" switch to "Playback."

(e) Adjust Volume and Tone Controls to the volume and tone desired.

TROUBLES

Motor Runs but Mechanism Fails to Operate -

1. Spring (53) loose or missing. If this is the case, the main drive pulley (49) will not be held in contact with the flywheel (48).

2. Spring (58 and 60) loose. This causes failure of the mechanism to operate in the Forward speed.

3. Motor Pulley (54) loose on motor shaft.

Mechanism Operates in Forward Speed but Will not Rewind -

1. Spring (41A) loose or missing.

Failure in Erasing -

1. Spring (31) loose, causing the Erase Head (7) to stay in an outward position.

Recordings Are Erased in the Playback Position -

1. Check mechanism to see if it is properly set for Playback.

2. Spring (31) loose, thereby leaving the Erase Head (7) in Erase position.

Speed Variation or "Wow" -

1. Check the motor pulley (54), main drive pulley (49), and Flywheel (48) for oil or foreign material. Clean with carbon tetrachloride to remove oil.

2. Capstan pressure roller (11) binds, causing speed variation or "Wow."

3. Spring (21) loose; this prevents the pressure roller (11) from making contact with the capstan which gives varying speed of the tape.

Takeup Spindle Fails to Wind Tape on Reel When the Mechanism Is Operating -

1. Spindle (12) binding in a raised position. This prevents the clutch, Items (42, 43, and 44) from making frictional contact, thereby preventing the rotation of the spindle and reel.

Tape From Takeup Reel Overruns When Machine Is Turned From Rewind to Station 4, or to Stop -

1. Rubber boot on brake shoe (15) missing, thereby not stopping the rotation of the takeup reel.

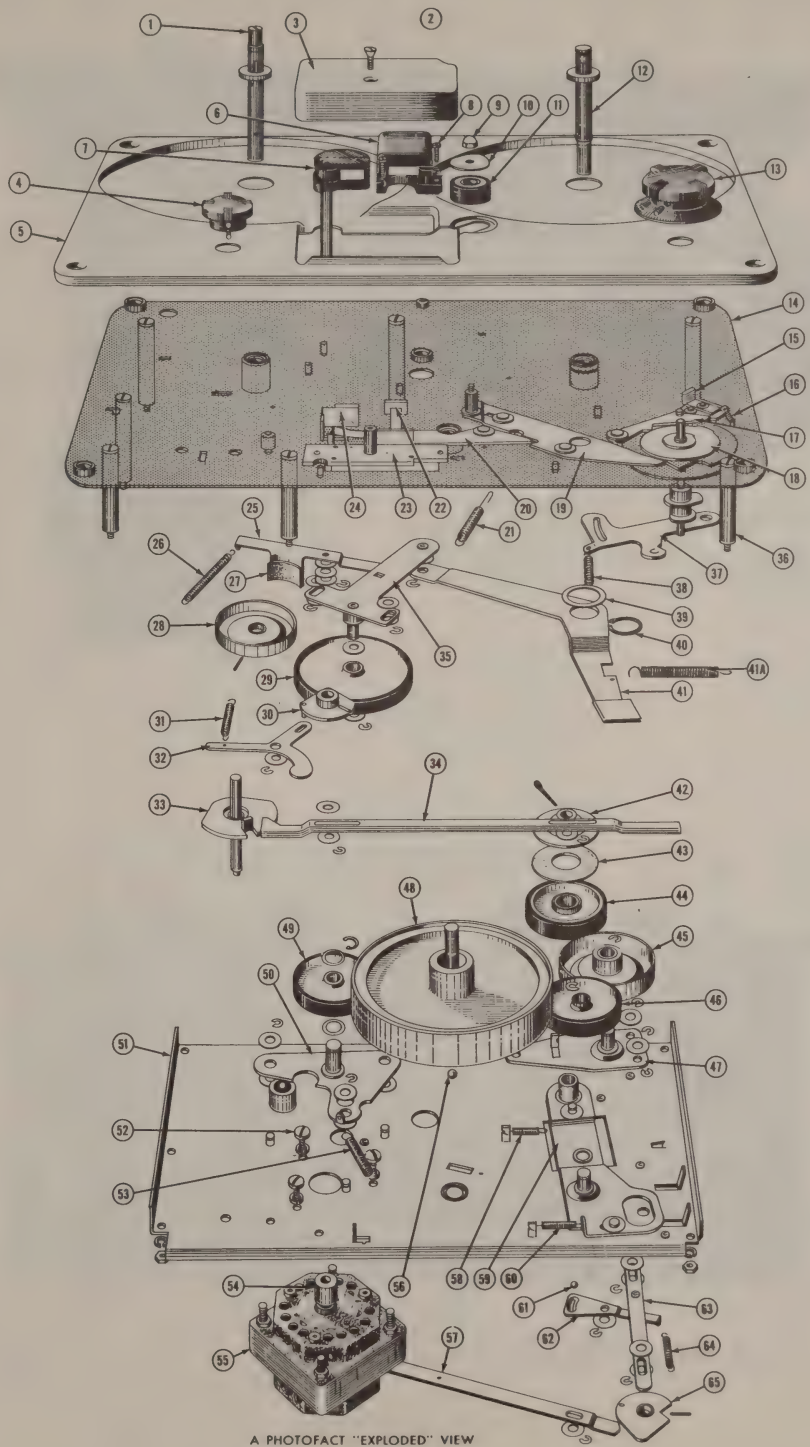
Uneven Rotation of the Supply Reels When in Forward Motion -

1. Felt pad on brake lever (25) missing. If the brake pad is missing, there will be no drag on the supply reel drum (28). The friction set up by the brake lever (25), against the drum (28), prevents any jerking or uneven rotation of the supply reel by the tape.

2. Spring (26) loose, thus not holding the brake (25) against the drum (28).

Failure to Record -

1. Recording head pressure pad and spring (22) not holding tape against recording head (6).



A PHOTOFACT "EXPLODED" VIEW

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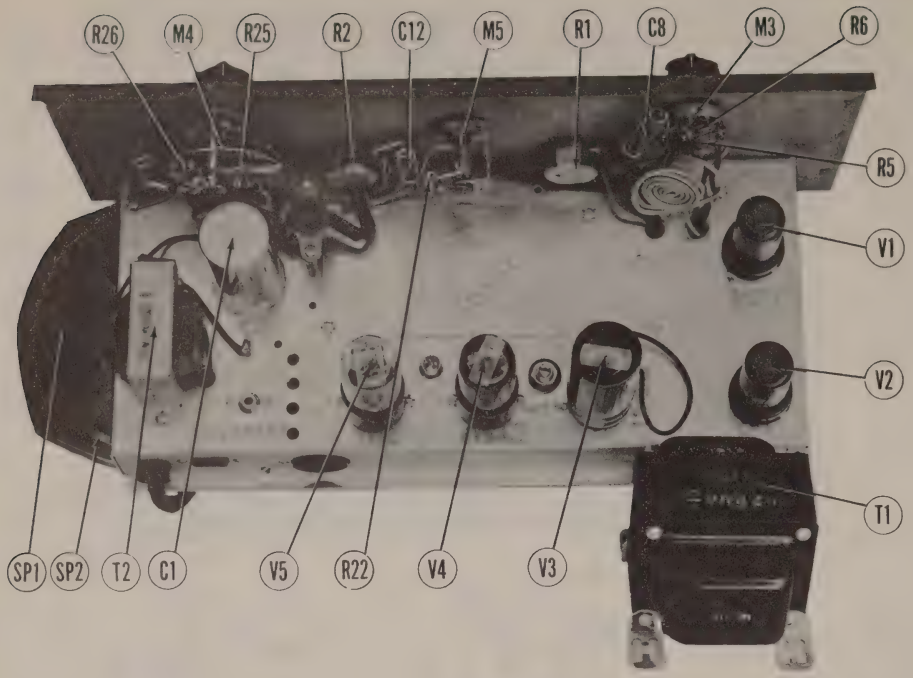


Figure 5

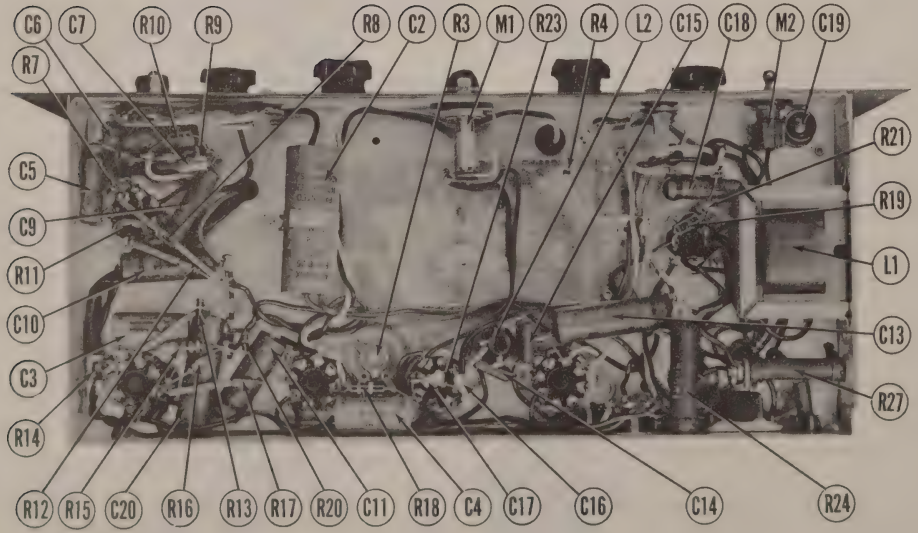
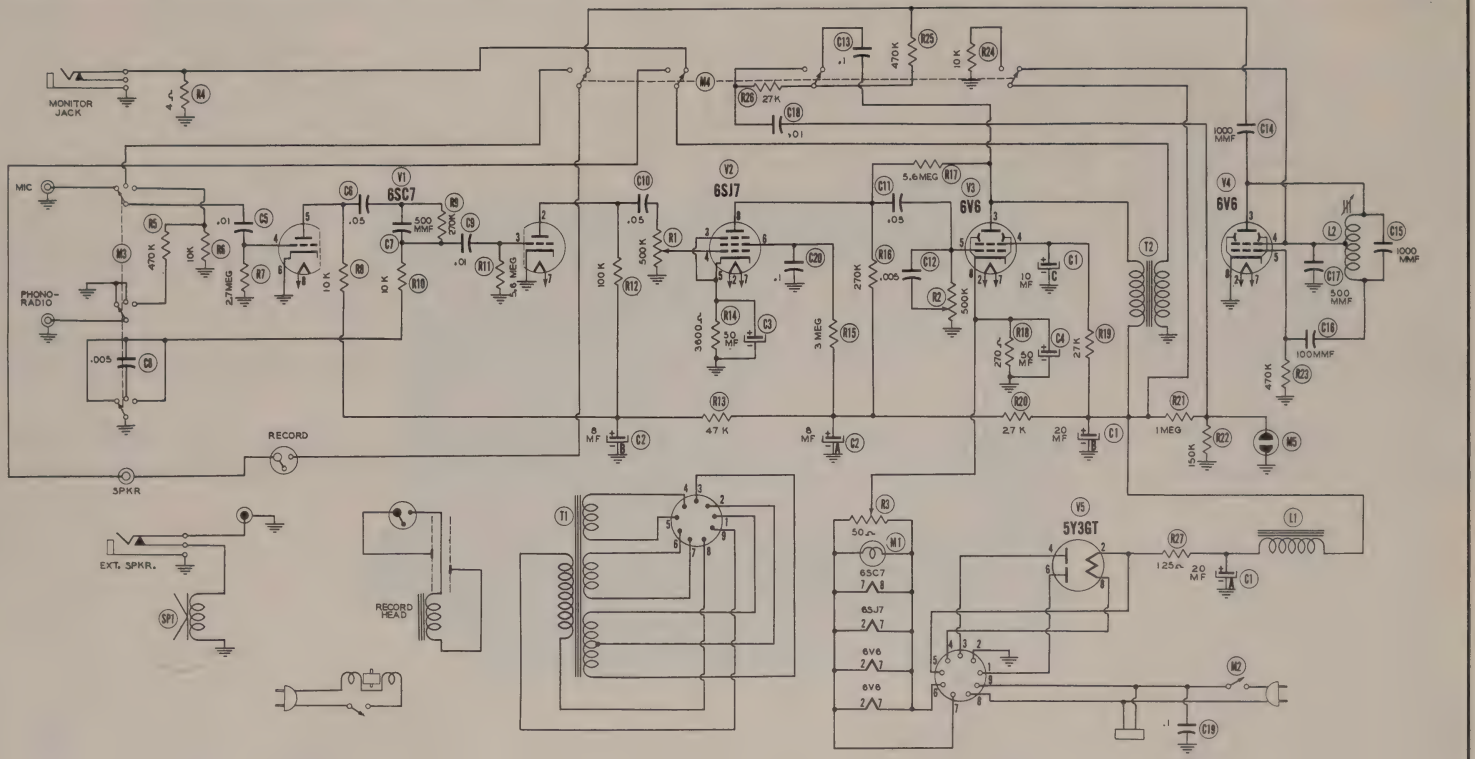


Figure 6



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0V	85VDC	-.3VDC	-.2VDC	135VDC	0V	#	#
V 2	6SJ7	0V	#	1.3VDC	0V	1.3VDC	25VDC	#	162VDC
V 3	6V6GT	0V	#	285VDC	230VDC	0V	0V	#	10VDC
V 4	6V6GT	0V	#	315VDC	315VDC	8-19.5VDC	0V	#	0V
V 5	5Y3GT	0V	330VDC	0V	320VAC	0V	320VAC	300VDC	330VDC

6.3VAC MEASURED ACROSS FILAMENTS.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0Ω	†170KΩ	5.6 Meg.	2.7 Meg.	†85KΩ	0Ω	270Ω	270Ω
V 2	6SJ7	0Ω	270Ω	3.6KΩ	1Ω	3.6KΩ	†3 Meg.	270Ω	†300KΩ
V 3	6V6GT	INF.	270Ω	†550Ω	†27KΩ	500KΩ	INF	270Ω	270Ω
V 4	6V6GT	0Ω	270Ω	†270Ω	†250Ω	500KΩ	INF.	270Ω	0Ω
V 5	5Y3GT	INF.	60KΩ	INF.	160Ω	INF.	150Ω	60KΩ	60KΩ

† MEASURED FROM PIN 8 OF V5

NOTE: ALL MEASUREMENTS ARE TAKEN WITH PLAYBACK-RECORD SWITCH IN PLAYBACK POSITION EXCEPT V4 WHICH IS TAKEN IN RECORD POSITION.

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MASCO
MODEL 375

MECHANICAL PARTS LIST

Ref. No.	Description
1	Supply Reel
2	Screw (Housing)
3	Housing
4	Erase, Record-Play Control Knob
5	Top Cover
6	Recording Head
7	Erase Head
8	Mounting Screw for Erase Head No. 4-40 x 5/16
9	Hex Cap Nut
10	Pressure Roller Washer
11	Capstan Pressure Roller
12	Takeup Reel
13	Control Knob
14	Sub-Plate Cover
15	Brake Shoe
16	Brake Lever Spring
17	Brake Lever
18	Control Shaft and Cams
19	Capstan Pressure Roller Lever
20	Recording Head Pressure Pad Actuating Lever
21	Tension Spring for Pressure Roller Lever
22	Recording Head Pressure Pad
23	Housing Moutning Bracket
24	Pressure Pad - Erase Head
25	Supply Reel Brake Lever
26	Brake Lever Tension Spring
27	Brake Pad
28	Supply Reel Drum
29	Idler Wheel (Supply Reel Drum)
30	Erase Head Swing Cam
31	Tension Spring
32	Swing Lever Erase Head
33	Swing Cam and Shaft Erase Head
34	Release Lever Erase Head
35	Idler Wheel Arm and Shaft
36	Sub-Plate Mounting Stud
37	Control Cam Positioning Lever
38	Tension Spring
39	Washer
40	Truarc Retaining Ring
41	Idler Wheel Shifting Lever
41A	Tension Spring
42	Clutch Diaphragm
43	Felt Pad
44	Takeup Reel Pulley
45	Idler Wheel Drum Takeup
46	Takeup Wheel Pulley Driver
47	Takeup Wheel Arm and Shaft
48	Fly-Wheel
49	Main Drive Pulley
50	Drive Wheel Arm and Shaft
51	Bottom Mounting Plate
52	Motor Mounting Screws
53	Tension Spring
54	Motor Pulley
55	Motor
56	Ball Bearing for Main Drive Wheel
57	Main Drive Pulley Release Lever
58	Tension Spring
59	Shifting Lever
60	Tension Spring
61	Ball Bearing for Takeup Reel Pulley
62	Clutch Cam Lever
63	Clutch Cam Actuating Lever
64	Clutch Cam Tension Spring
65	Actuating Cam

ELECTRICAL PARTS LIST

Item No.	Use and Description
V1	6SC7, 1st AF Amplifier
V2	6SJ7, 2nd AF Amplifier
V3	6V6GT, Power Output
V4	6V6GT, Oscillator
V5	5Y3GT, Rectifier
C1A	Filter (Electrolytic), 20 MFD. @ 450 V.
C1B	Filter (Electrolytic), 20 MFD. @ 450 V.
C1C	Output Screen Bypass (Electrolytic), 10 MFD. @ 450 V.
C2A	Decoupling (Electrolytic), 8 MFD. @ 450 V.
C2B	Decoupling (Electrolytic), 8 MFD. @ 450 V.
C3	2nd AF Amp. Cathode Bypass (Electrolytic) 50 MFD. @ 50 V.
C4	Output Cathode Bypass (Electrolytic), 50 MFD. @ 50 V.
C5	Audio Coupling, .01 MFD. @ 600 V.
C6	Audio Coupling, .05 MFD. @ 600 V.
C7	Tone Compensation, 500 MMF. (Ceramic)
C8	Tone Compensation, .005 MFD. @ 600 V.
C9	Audio Coupling, .01 MFD. @ 600 V.
C10	Audio Coupling, .05 MFD. @ 600 V.
C11	Audio Coupling, .05 MFD. @ 600 V.
C12	Tone Compensation, .005 MFD. @ 600 V.
C13	Audio Coupling, .1 MFD. @ 600 V.
C14	Oscillator Coupling, 1000 MMF. @ 500 V.
C15	Fixed Trimmer, 1000 MMF. @ 500 V.
C16	Oscillator Feedback, 100 MMF. (Ceramic)
C17	RF Bypass, 500 MMF. (Ceramic)
C18	Audio Coupling, .01 MFD. @ 600 V.
C19	Line Filter, .1 MFD. @ 600 V.
C20	2nd AF Screen Bypass, .1 MFD. @ 600 V.
R1	Volume Control, 500K Ohm, 1/2 Watt
R2	Tone Control, 500K Ohm, 1/2 Watt
R3	Hum Balance Control, 50 Ohm, 2 Watt (Wirewound)
R4	Monitor Shunt, 40 Ohm, 5 Watt (Wirewound)
R5	Tone Compensation, 470K Ohm, 1/2 Watt
R6	Tone Compensation, 10K Ohm, 1/2 Watt
R7	1st AF Grid, 2.7 Meg., 1/2 Watt
R8	1st AF Plate, 10K Ohm, 1/2 Watt
R9	Tone Compensation, 270K Ohm, 1/2 Watt
R10	Tone Compensation, 10K Ohm, 1/2 Watt
R11	1st AF Grid, 5.6 Meg., 1/2 Watt
R12	1st AF Plate, 100K Ohm, 1/2 Watt
R13	Decoupling, 47K Ohm, 1/2 Watt
R14	2nd AF Cathode, 3900 Ohm, 1/2 Watt
R15	2nd AF Screen, 3.3 Meg., 1/2 Watt
R16	2nd AF Plate, 270K Ohm, 1/2 Watt
R17	Feedback, 5.6 Meg., 1/2 Watt
R18	Output Cathode, 270 Ohm, 1 Watt
R19	Output Screen, 27K Ohm, 1 Watt
R20	Decoupling, 27K Ohm, 1/2 Watt
R21	Series Neon, 1 Meg., 1/2 Watt
R22	Neon Lamp Shunt, 150K Ohm, 1/2 Watt
R23	Oscillator Grid, 470K Ohm, 1/2 Watt
R24	Bleeder, 10K Ohm, 20 Watt (Wirewound)
R25	Tone Compensation, 470K Ohm, 1/2 Watt
R26	Tone Compensation, 27K Ohm, 1 Watt
R27	Surge Limiter, 125 Ohm, 10 Watt (Wirewound)
T1	Power Transformer
T2	Output Transformer
SP1	Speaker (PM)
SP2	Cone (3.7 Ohm Voice Coil)
L1	Filter Choke
L2	Oscillator Coil
M1	Pilot Lamp, Type #47
M2	Power Switch
M3	Input Selector Switch
M4	Record-Playback Switch
M5	Neon Lamp

PHOTOFACT* Folder

MECK MODELS
MM614C, T, MM616C, T,
MM619C, XSB

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MM619C, XSB

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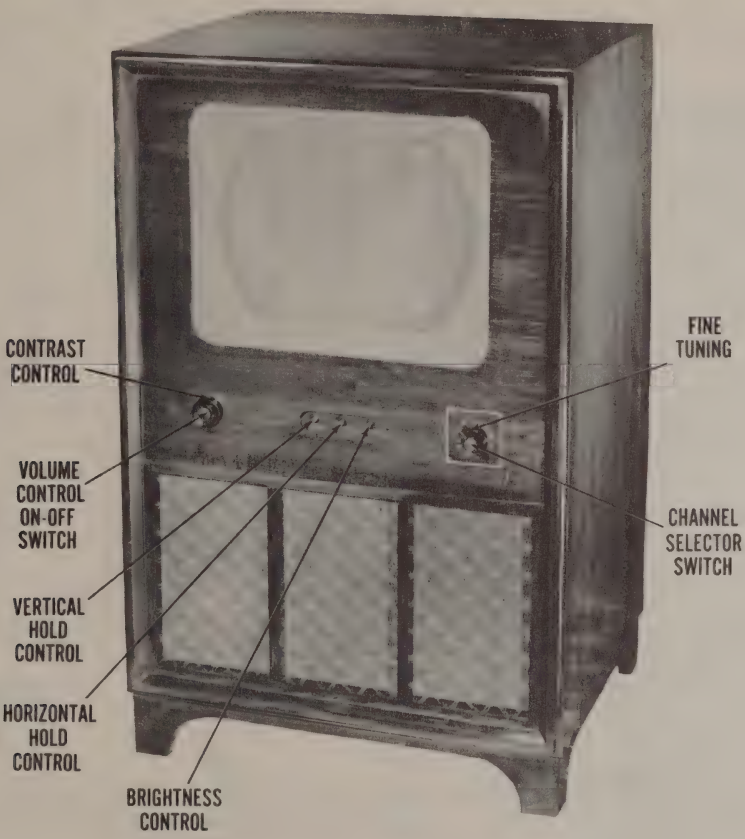
Date 12/50 Set No. 117—Folder No. 8



MECK MODELS
MM614C, T, MM616C, T, MM619C, XSB

MECK MODEL XSB

TRADE NAME	Meck, Models MM614C, T, MM616C, T, MM619C, XSB
MANUFACTURER	John Meck Industries, Plymouth, Indiana
TYPE SET	Television Receiver
TUBES	Twenty or Twenty One

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 1.65 Amp. at 117 Volts AC
TUNING RANGE—Channels 2 thru 13

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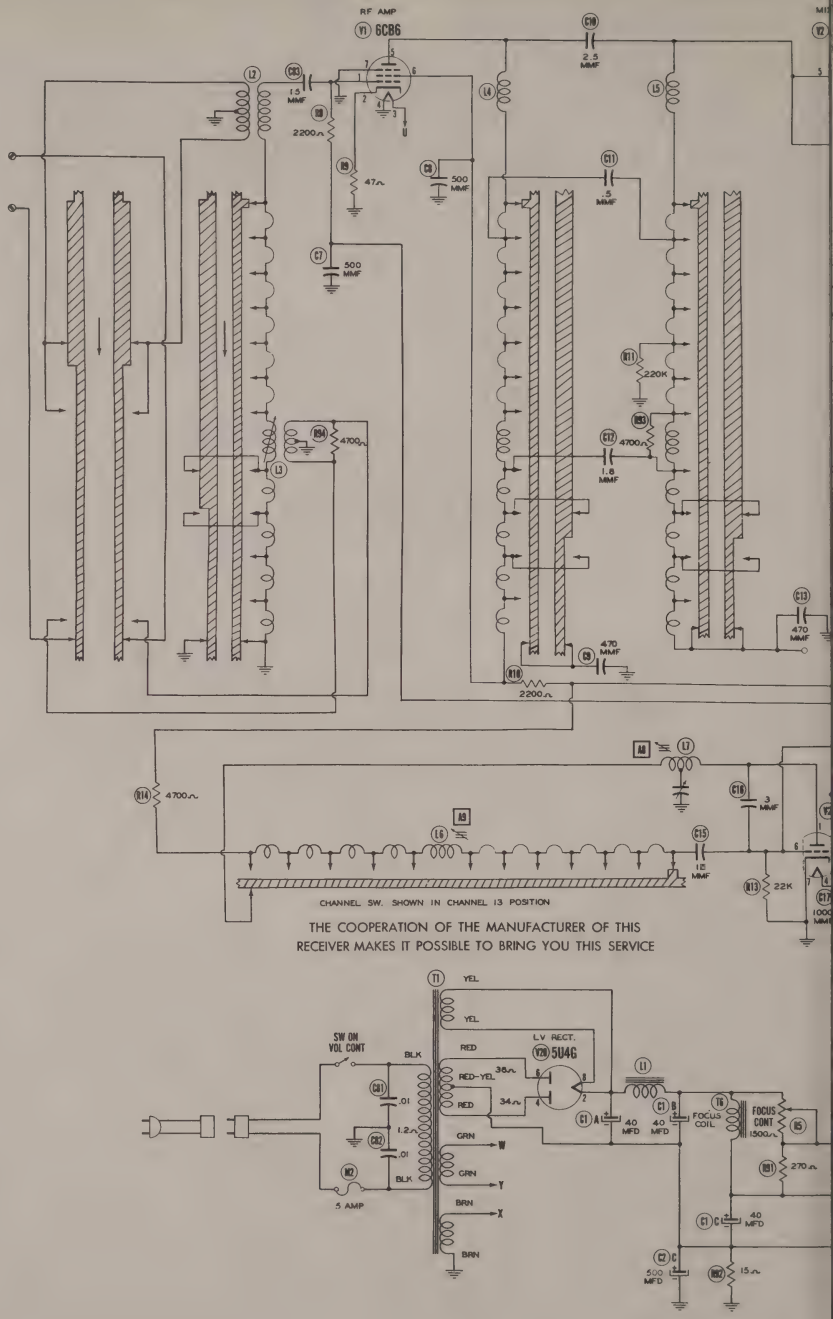

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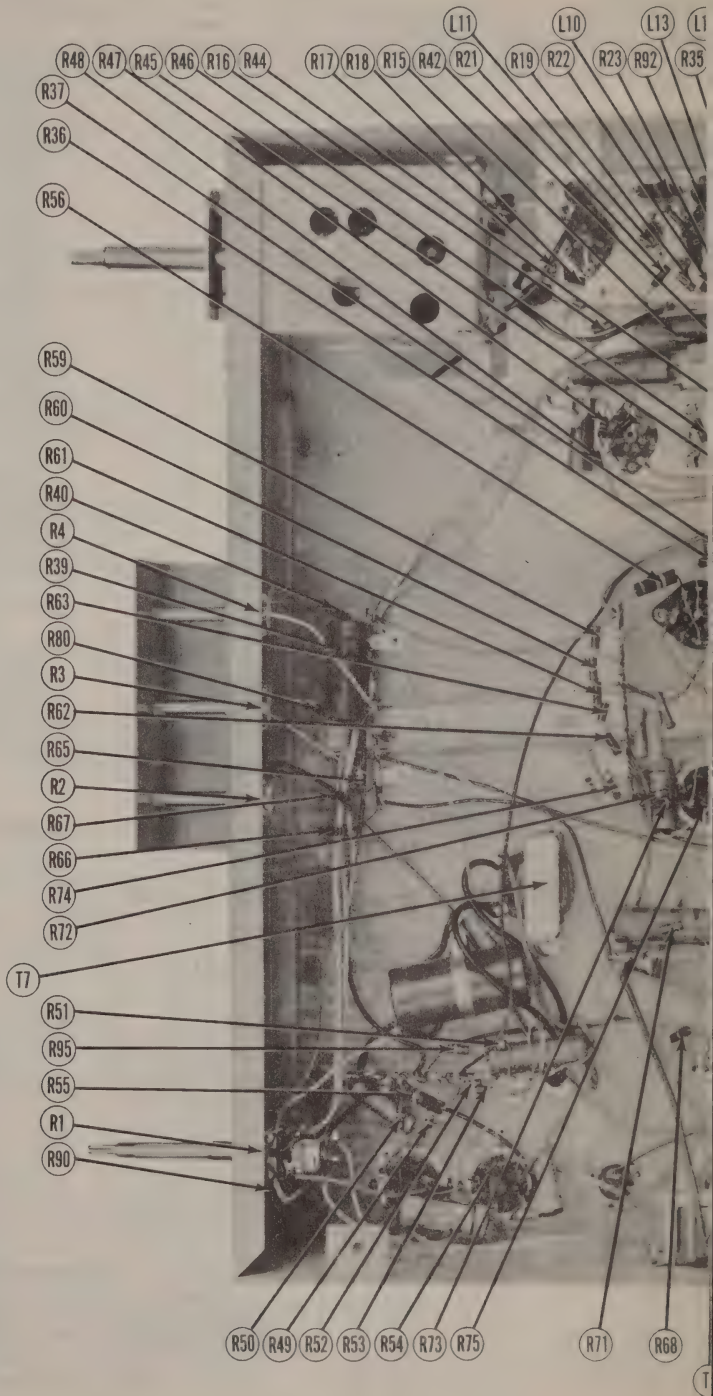
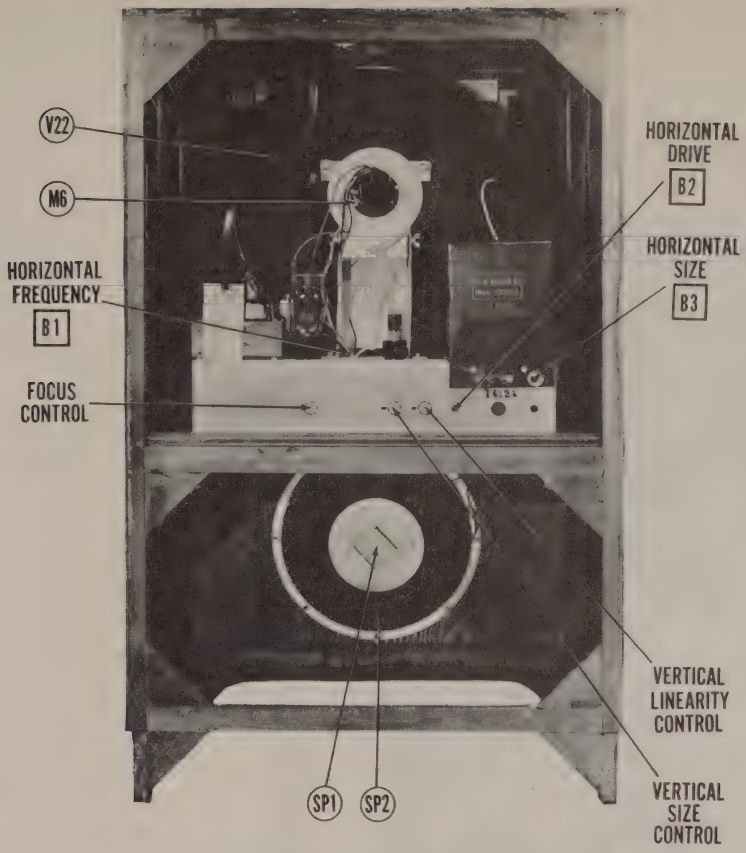
⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION



CHASSIS BOTTOM VIEW-RESISTOR

R AND INDUCTOR IDENTIFICATION



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) clockwise as far as possible without crowding the right side of the picture.

Adjust the horizontal size slug (B3) until the picture fills the mask horizontally.

Adjust the horizontal linearity slug (B4) until the picture is symmetrical from left to right.

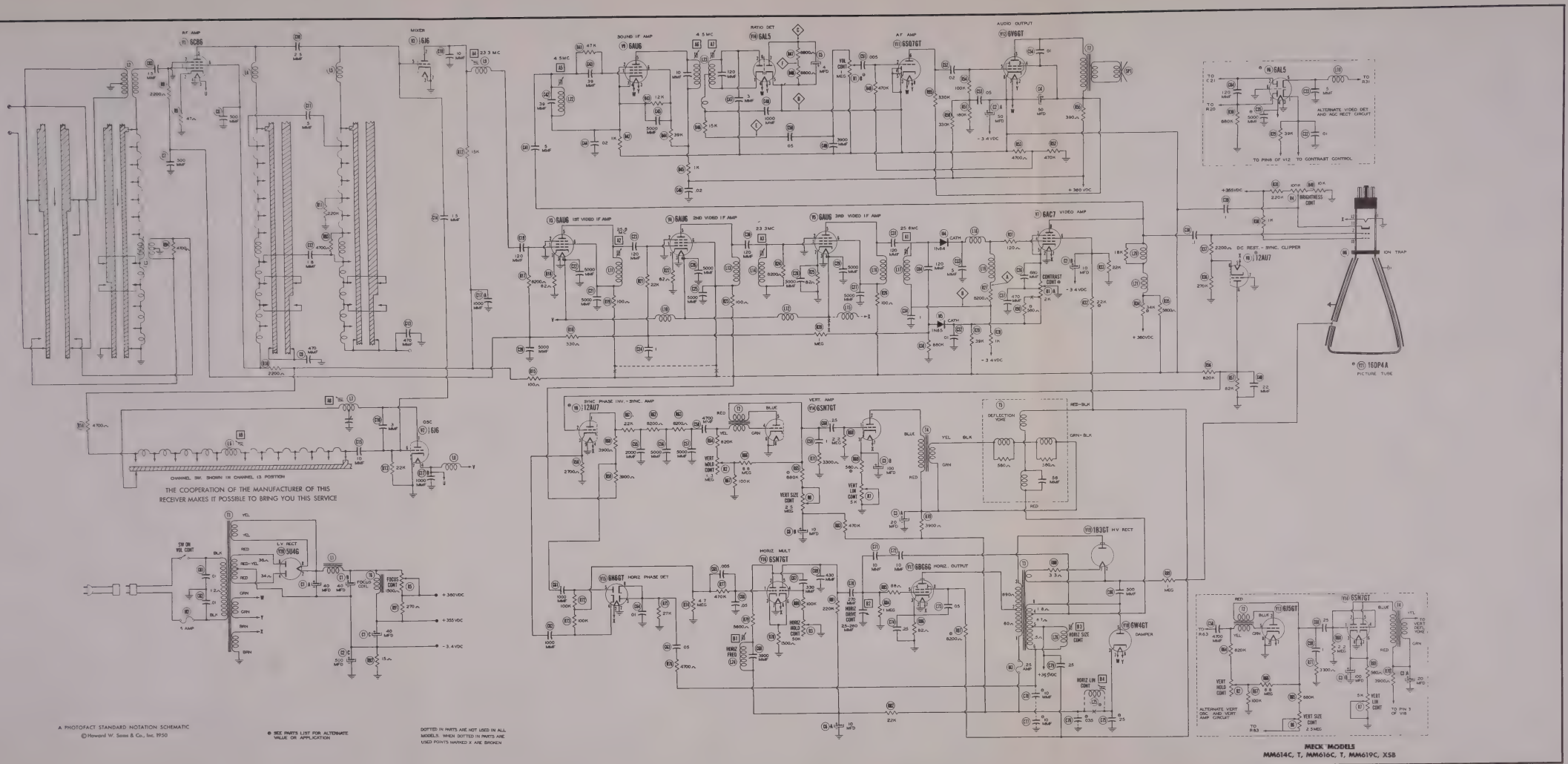
Readjustment of B2 may be necessary for optimum results.

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove six wood screws holding rear cover in place. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect speaker leads.
5. Remove one 5/16" hex nut holding brace from top of picture tube to top of cabinet.
6. Remove four 5/16" hex head bolts holding chassis in cabinet. Remove chassis.
7. Remove two 5/16" hex nuts holding speaker. Remove speaker.

FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

CHASSIS TOP VIEW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* SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
MECK MODELS
MM614C, T, MM616C, T, MM619C, XSB

MECK MODELS
MM614C, T, MM616C, T, MM619C, XSB

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	MECK PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.8Ω			12A4A	
	CONE DIA.	V. C. DIA.				
SP2	11 1/2"	1"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE @ CURRENT 1000 ~	MECK PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.190ADC	27Ω	1.5 Henries		C-2325 ①	C-2974	TH-4200①	① Drill one new mounting hole.

COILS (RF-IF)

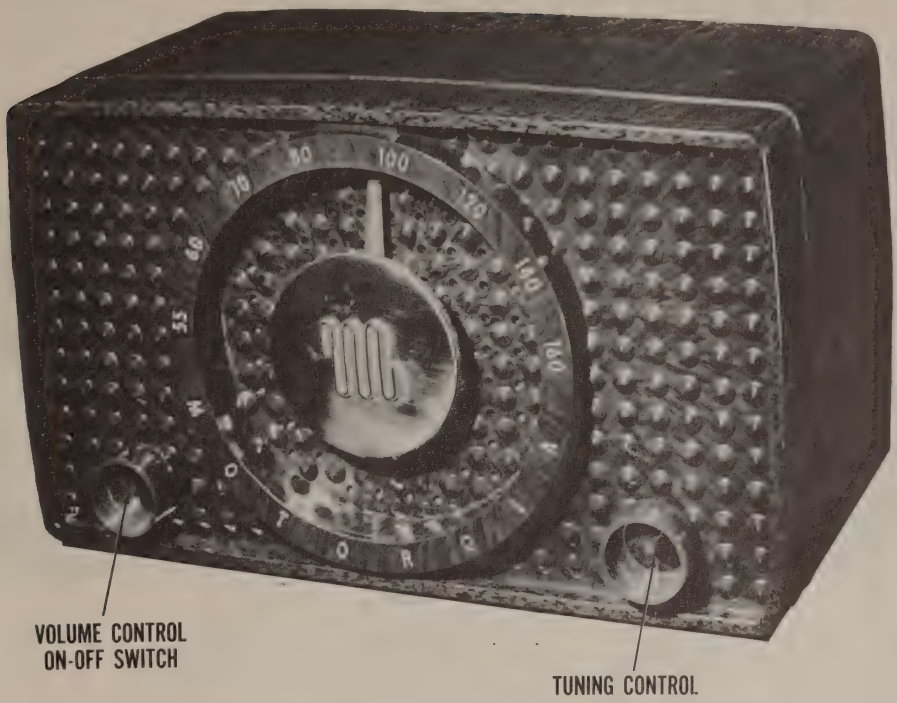
ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	MECK PART No.	MEISSNER PART No.	IRC PART No.	
L2	Ant. Coil	0Ω	0Ω				
L3	Ant. Coil	0Ω	0Ω				
L4	RF Coil	0Ω					
L5	Mixer Grid Coil	0Ω					
L6	Osc. Coil	0Ω					Channel 6
L7	Osc. Coil	0Ω					Channel 13
L8	Fil. Choke	.2Ω				CLA-4.7	4.7 microhenries
L9	1st Video IF	.5Ω					
L10	Fil. Choke	0Ω					
L11	2nd Video IF	.1Ω					
L12	Fil. Choke	0Ω					
L13	RF Choke	4Ω					
L14	3rd Video IF	.1Ω					
L15	Fil. Choke						Not used in all models.
L16	RF Choke	4Ω					
L17	4th Video IF	.1Ω					
L18	Peaking	7.8Ω			19-1921		120 microhenries
L19	Peaking	20Ω					600 microhenries
L20	Peaking	9.2Ω			19-1921 †		150 microhenries, wound on 18KΩ resistor.
L21	Peaking	13Ω			19-1922		300 microhenries
L22	Sound IF	1.9Ω					
L23	Ratio Det. Trans.	4.2Ω	.2Ω				
L24	Horiz. Freq.	90Ω					
L25	Horiz. Lin.						Not used in all models.
L26	Horiz. Size	.3Ω					

† Parallel with 18KΩ resistor.

MISCELLANEOUS

ITEM No.	PART NAME	MECK PART No.	NOTES
M1	RF Tuner		
M2	Fuse		5A 250V Type 3AG
M3	Fuse		.25A 250V Type 3AG
M4	Crystal		Video Det. 1N-64
M5	Crystal		AGC Rectifier 1N-65
M6	Ion Trap		
B2	Trimmer		Horiz. drive 25-280MMF

MOTOROLA MODELS
5H11U, 5H12U, 5H13U (Ch. HS-244)



MOTOROLA MODELS
5H11U, 5H12U, 5H13U (Ch. HS-244)

MOTOROLA MODEL 5H11U

TRADE NAME	Motorola, Models 5H11U, 5H12U, 5H13U (Ch. HS-244)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago 51, Illinois
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna.
TUBES	(Five) Types 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50C5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC Rating .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535 - 1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer to last reference mark at low frequency end of dial.
Use isol ation transformer if avaiable. If not, connect a .1MFD capacitor in series with low sideof signal generator and chassis.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01 MFD.	High side to stator on rear section of tuning gang. Low side to B-	455KC (400ΩMOD)	Tuning gang fully open.	Across Voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	Tuning gang fully open.	" "	A5	Fashion loop several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output.	" "	A6	"

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PARTS LIST AND DESCRIPTIONS

MOTOROLA MODEL 5H11U

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	Det.-AVC-AF	12AT6	12AT6	7BT	
V4	Power Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	23B600855	PRS150/50-30		EDL5315		TVA-2450	Filter Red
B	30	150							Filter Green
C2	.05	200	8R9821	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3A	220		*21B601007	SI220	D6-221	5W5T25	GP2K-220	19C13	Diode RF Filter
B	2000			BPD-002	DD-202	PTE6D2	801-002	29C2	Audio Coupling
C	110			SI120	D6-121	5W5T1	GP2K-120	19C29	AF Amp. Plate
D	5000			BPD-005	DD-502	PTE6D5	811-005	29C1	Audio Coupling
E	110			SI120	D6-121	5W5T1	GP2K-120	19C29	Output Grid
C4	.022	400	8R9802	P488-022	DF-203	PTE4S2		4TM-S22	Output Plate Bypass
C5	.05	400	8R9816	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter
C6	.15	400	8R9843	P488-15		GT4P2		72P53	Line Isolation ‡
C7A	220		†21B482847	SI220	D6-221	5W5T25	GP2K-220		Diode RF Filter
B	2000			BPD-002	DD-202	PTE6D2	801-002	34C3	Audio Coupling
C	220			SI220	D6-221	5W5T25	GP2K-220		AF Amp. Plate Bypass
D	5000			BPD-005	DD-502	PTE6D5	811-005		Audio Coupling

*Items C3A, C3B, C3C, C3D, C3E, R5A, R5B, and R5C are combined into one unit.
†A multiplate capacitor (Items C7A, C7B, C7C and C7D) is used in some sets, replacing Items C3A, C3B, C3C, and C3D respectively.
‡Not used in all models.

CONTROLS

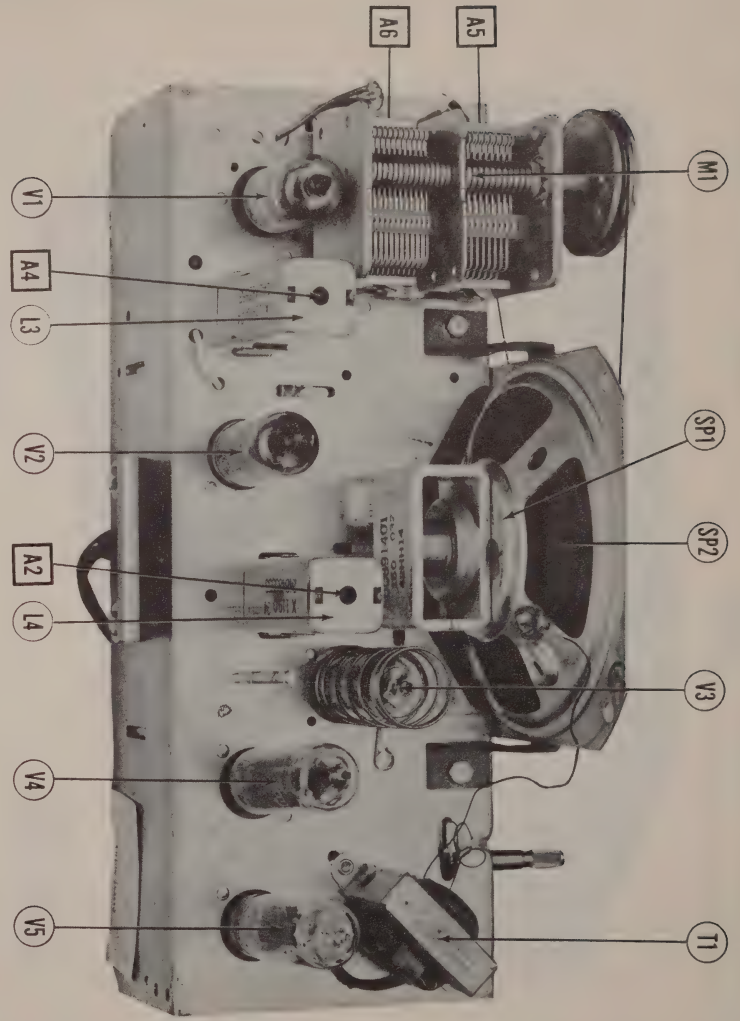
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1 Meg	½	18K600473	Q13-137	AG-61-Z	BSK-70-S	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	6R6028	BTS-22K	Converter Grid
R3	3.3 Meg	½	6R2118	BTS-3.3 Meg	AVC Network
R4	100Ω	½	6R6018	BTS-100	IF Amp. Cathode
R5A	6.8 Meg	2	21B601007*		AF Amp. Grid
B	470KΩ	2			AF Amp. Plate
C	470KΩ	2			Output Grid
R6	150Ω	½	6R3992	BTS-150	Output Cathode
R7	1000Ω	½	6R3953	BTB-1000	Filter
R8	27Ω	½	6R5683		Surge Limiter
R9	10 Meg	½	6R2109	BTS-10 Meg	AF Amp. Grid - See Note 1
R10	470KΩ	½	6R6032	BTS-470K	AF Amp. Plate - See Note 1
R11	470KΩ	½	6R6032	BTS-470K	Output Grid - See Note 1

*Items R5A, R5B, R5C, C3A, C3B, C3C, C3D and C3E are combined into one unit in some sets.
Note 1. Resistors R9, R10 and R11 are used in some sets to replace R5A, R5B, R5C respectively.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2200Ω	3.2Ω	225Ω	.4Ω	25K485973	A-3876①	A-3025①	RO-2①	① Drill one new mounting hole.

SPEAKER

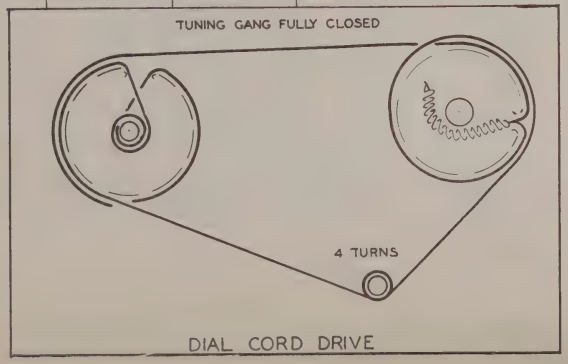
ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.2Ω	50C691401	ST-113 Mod. P4-X	4A07	
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

COILS (RF-IF)

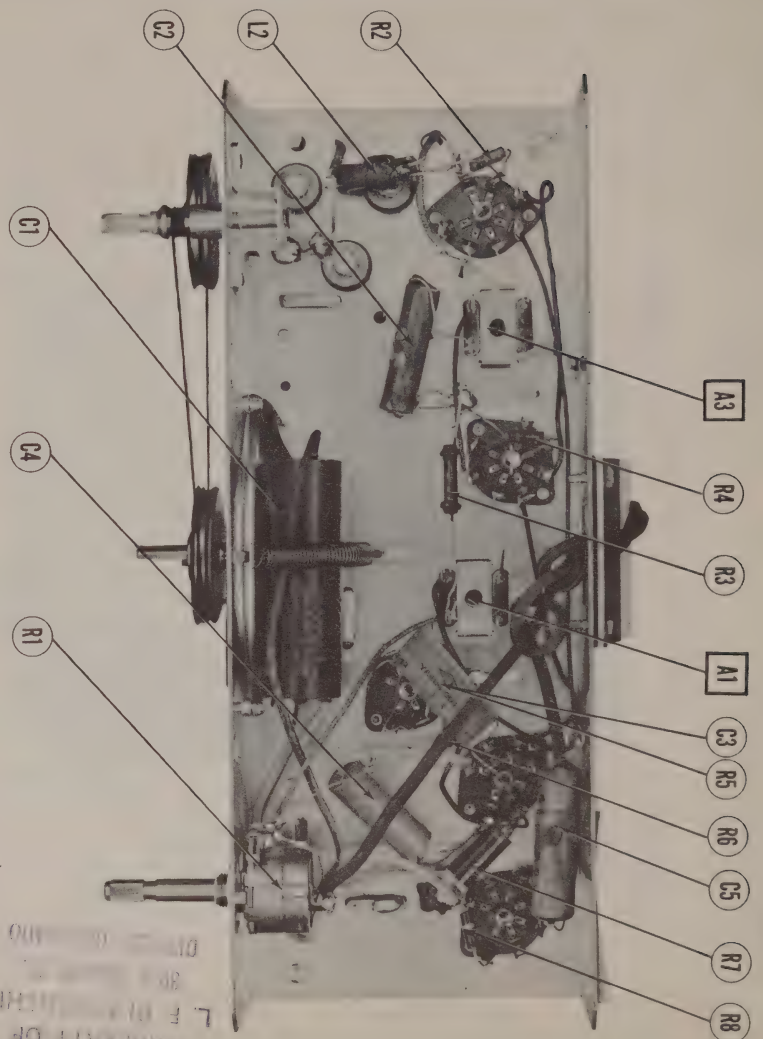
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	
L1	Loop Ant.	3.2Ω		24C600518		Includes Cabinet Back
L2	Osc. Coil	.9Ω	11.6Ω	24K600812	14-1073	
L3	1st IF	19Ω	19Ω	24B485553	16-6758	
L4	2nd IF	19Ω	19Ω	24B485553	16-6758	

MISCELLANEOUS

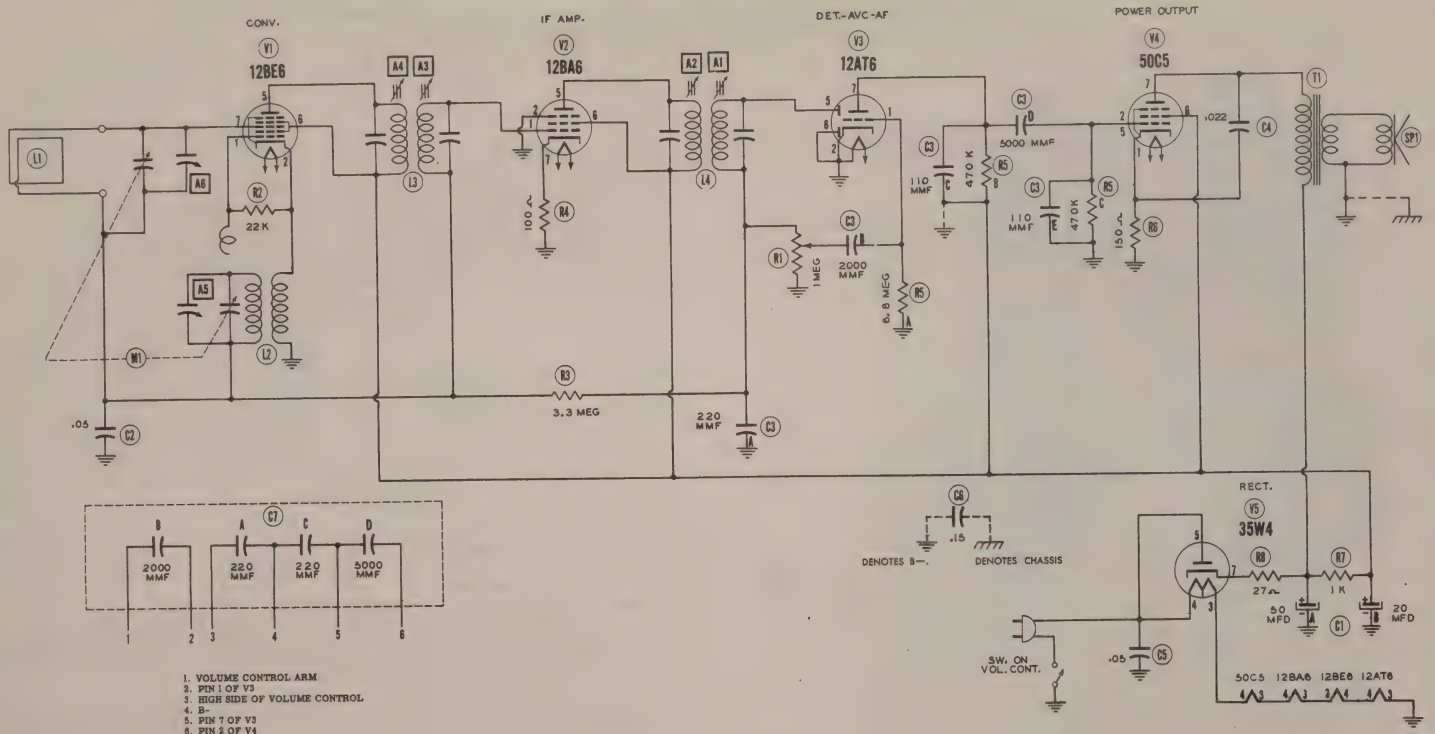
ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M1	2 Gang Var. Cap.	19B600483	(25-374 Mmf, 14-167 Mmf)
	Dial Pointer	52B600537	
	Cabinet	16E600461	Model 5H11U (Walnut)
	Cabinet	16K600463	Model 5H12U (Ivory)
	Cabinet	16K600465	Model 5H13U (Green)
	Knob	36B600566	Walnut
	Knob	36K600567	Ivory
	Knob	36K600568	Green



CHASSIS—BOTTOM VIEW



MOTOROLA MODEL 5H11U



1. VOLUME CONTROL ARM
2. PIN 1 OF V3
3. HIGH SIDE OF VOLUME CONTROL
4. B−
5. PIN 7 OF V3
6. PIN 2 OF V4

IF = 455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	§-8.4VDC	0V	24VAC	12VAC	95VDC	95VDC	-.1VDC
V 2	12BA6	-.1VDC	0V	24VAC	35VAC	95VDC	95VDC	1.3VDC
V 3	12AT6	-.7VDC	0V	0V	12VAC	.6VDC	0V	80VDC
V 4	50C5	6.8VDC	0V	35VAC	85VAC	0V	95VDC	105VDC
V 5	35W4	115VDC	0V	85VAC	117VAC	117VAC	110VAC	118VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.9Ω	25Ω	13Ω	†1KΩ	†1KΩ	4.3 Meg.
V 2	12BA6	4.3 Meg.	0Ω	25Ω	38Ω	†1KΩ	†1KΩ	100Ω
V 3	12AT6	6.8 Meg.	0Ω	0Ω	13Ω	1 Meg.	0Ω	†470KΩ
V 4	50C5	150Ω	470KΩ	36Ω	85Ω	470KΩ	†1KΩ	†250Ω
V 5	35W4	†27Ω	Inf.	85Ω	120Ω	120Ω	110Ω	50KΩ

† MEASURED FROM PIN 7 OF V5

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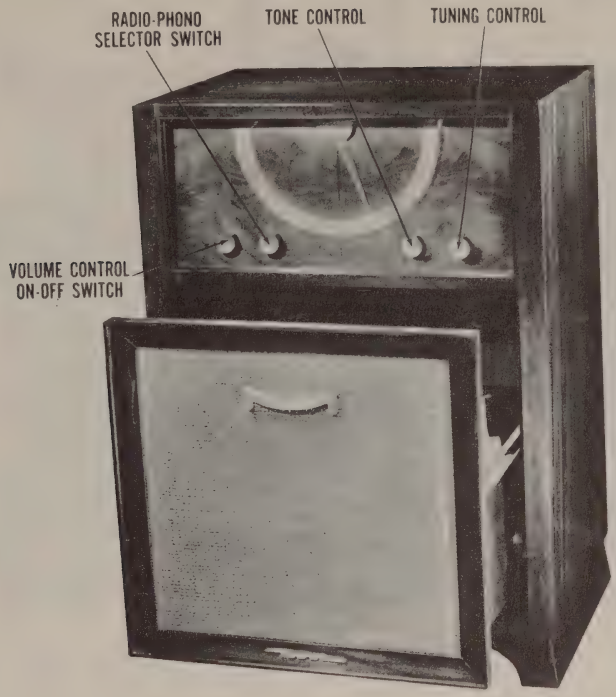
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MOTOROLA MODELS
6F11, 6F11B (Ch. HS-264)



MOTOROLA MODELS
6F11, 6F11B (Ch. HS-264)

MOTOROLA MODEL 6F11

TRADE NAME Motorola, Models 6F11, 6F11B (Ch. HS-264)
MANUFACTURER Motorola Inc., 4545 Augusta Blvd., Chicago 51, Illinois
TYPE SET AC Operated Combination Phono - Radio, Superheterodyne Receiver With Loop Antenna.
TUBES (SIX) Types 6BA6 RF Amp., 6BE6 Converter, 6BA6 IF Amp., 6AV6 Det.-AVC-AF, 6K6GT Power Output, 5Y3GT Rectifier

POWER SUPPLY 110-120 Volts AC — RATING .50 Amp@ 117 Volts AC
TUNING RANGE—BROADCAST 535-1620KC — RECORD CHANGER -- MOTOROLA MODEL RC37

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer parallel with base of dial. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1 MFD	High side to stator on rear section of tuning gang.	455KC (400 ~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4,	Adjust for maximum output.
2.		Loop.	1620KC	Tuning gang fully open	Across voice coil.	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. If A5 shows insufficient range, set A5 to the center of its range and adjust trimmer on opposite side of tuning gang.
3.		Loop	1400KC	Tune for max. output.	Across voice coil.	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

MOTOROLA MODEL 6F11

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	6BA6	6BA6	7BR	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amp.	6BA6	6BA6	7BK	
V4	Det.-AVC-AF	6AV6	6AV6	7BT	
V5	Power Output	6K6GT	6K6GT	7S	
V6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	300	23B690975	┌AFH888G40		UPT44435		TVL-4605	▲Filter
B	40	250		└PRS25/25		C4		TVA-1205	■Filter
C	40	250							▲Filter
D	40	25							Output Cathode Bypass
C2	.05	400	8R9816	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C3	100		21B77286	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Coupling
C4	10000		21K482726	BPD-01	DD-103	PTE4S1	821-01	36C1	RF Amp. Screen
C5	100		21B77286	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Coupling
C6	47		21K77373	SI47	D6-470	5W5Q5	GP1K-47	19C25	Osc. Grid Cap.
C7	10000		21K482726	BPD-01	DD-103	PTE4S1	821-01	36C1	Osc. Anode Bypass
C8	10000		21K482726	BPD-01	DD-103	PTE4S1	821-01	36C1	RF Bypass
C9	10000		21K482726	BPD-01	DD-103	PTE4S1	821-01	36C1	IF Screen Bypass
C10	.01	400	8R9809	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C11	.005	600	8R9813	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C12	.005	600	8R9813	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Tone Comp.
C13	100		21B77286	SI100	D6-101	5W5T1	GP1K-100	19C11	AF Amp. Plate
C14	.005	600	8R9813	P688-005	DG-502	PTE6D5	811-005	6TM-D5	Tone Comp.
C15	.01	400	8R9809	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C16	.002	600	8R9847	P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Output Plate Bypass
C17	.05	400	8R490232	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter

CONTROLS

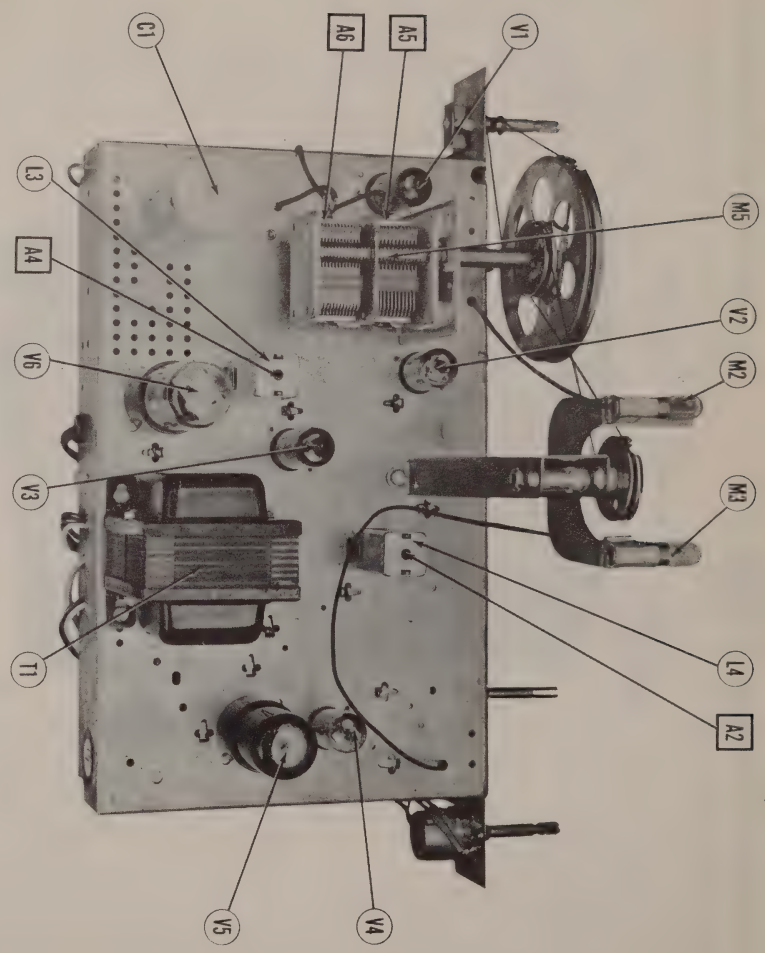
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	2 Meg	½	18A600974	Q13-139X		BT-80-S	Volume Control and Switch
B	Switch		Not Req.	76-1		Not Req.	Attach to R1A Per Instructions
R2A	1Meg	½	18K77399	Q14-137	AM-61-S	AN-68	Tone Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach To R2A Per Instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES
R3	1 Meg	½	6R6004	BTS-1Meg	RF Amp. Grid
R4	120Ω	½	6R5551	BTS-120	RF Amp. Cathode
R5	12KΩ	2	6R5766	BTB-12K	RF Amp. Decoup.
R6	4700Ω	½		BTS-4700	RF Amp. Plate - See Note 1
R7	33KΩ	½	6R6012	BTS-33K	Converter Grid
R8	47KΩ	½	6R6056	BTS-47K	Mixer Grid
R9	12KΩ	2	6R5766	BTB-12K	Decoup.
R10	220Ω	½	6R6270	BTS-220	IF Amp Cathode
R11	47KΩ	½	6R6056	BTS-47K	IF Amp Screen Decoup
R12	2.2 Meg.	½	6R3927	BTS-2.2 Meg	AVC Network
R13	47KΩ	½	6R6056	BTS-47K	AVC Diode-Filter
R14	470KΩ	½	6R6032	BTS-470K	AVC Network
R15	10 Meg.	½	6R2109	BTS-10Meg	AF Amp. Grid
R16	220KΩ	½	6R6015	BTS-220K	AF Amp. Plate
R17	33KΩ	½	6R6012	BTS-33K	Tone Compensation - See Note 2
R18	470KΩ	½	6R6032	BTS-470K	Output Grid
R19	470Ω	½	6R5593	BTS-470	Output Cathode -See Note 3
R20A	180Ω	3	17A690973	1 3/4A6-350 *	Filter - Wire Wound
B	180Ω	3			Filter - Wire Wound

Note 1. Some models use 2200Ω resistor in this application.
Note 2 Some models use 68KΩ resistor in this application.
Note 3. Some models use series resistors in this application to obtain desired resistance.
* Set slider to read 175Ω from each end of unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .50A	500 VCT ⑤ .066A	5 VAC ③ 2A	6-3VAC ④ 2.2A	25B600684	PC8403①		PV-60①

① Drill New Mtg. Holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	8000Ω	4Ω	700Ω	.8Ω	25B600969	A-3878②	A-3020	RO-18 ②	② Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	4Ω	50C601038	ST-117 Model P8-T	8A21	
	CONE DIA.	V. C. DIA.				
SP2	7 3/8"	1"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	
L1	Loop Ant.	2.8Ω		24C690896		
L2	Osc. Coil	4Ω	8.8Ω	24K691878	14-1073	White and Red Dot
L3	1st IF	18Ω	18Ω	24B485553	16-6758	Green Dot
L4	2nd IF	18Ω	18Ω	24K485555	16-6770	Pink Dot

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA					REMARKS
	MOTOROLA PART No.	ASTATIC PART No.		SHURE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	59K691907	AC-AG-J	A-AG	W26B	A66U	

ASTATIC AND SHURE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

DIAL LIGHTS

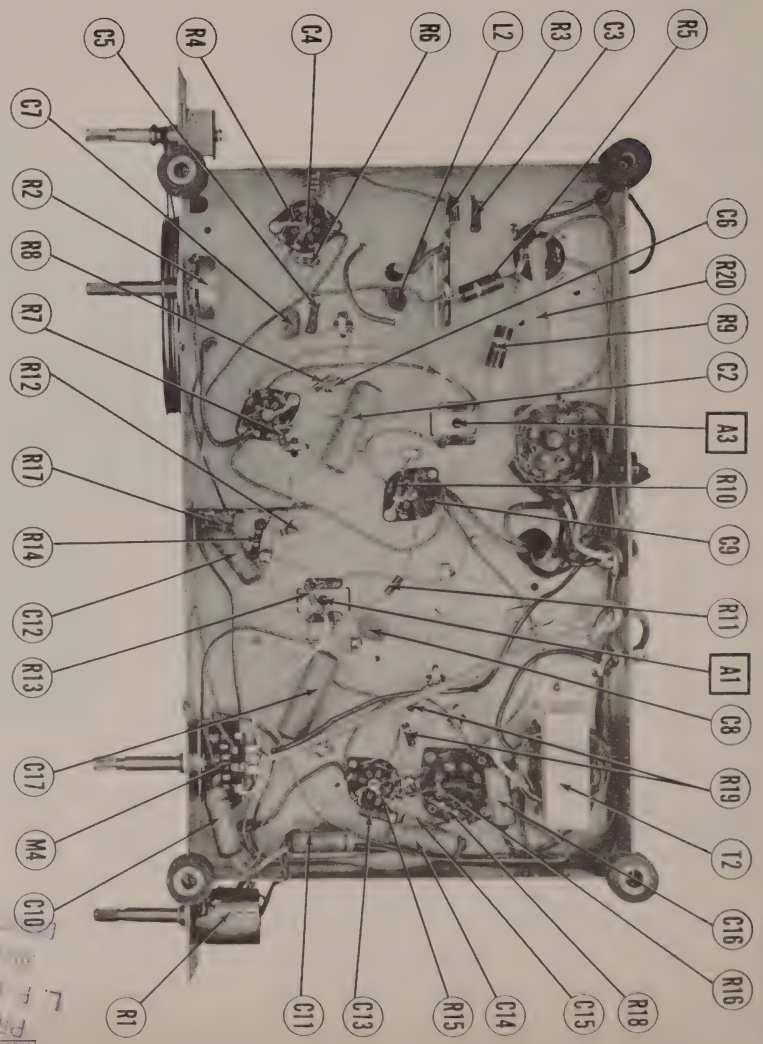
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MOTOROLA PART No.		
M2	Bayonet	6-8	.25	Blue	65X10867		Type No. 44
M3	Bayonet	6-8	.25	Blue	65X10867		Type No. 44

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M4	Switch	40B601065	Radio-Phono
M5	2Gang Var. Cap.	19B691877	(29-485MMF, 33-181MMF)
	Dial Scale	34K601066	
	Cabinet	15F600649	Model 6F11
	Cabinet	16K600650	Model 6F11B
	Knob	36K601052	Volume, Model 6F11
	Knob	36K601053	Phono-Radio, Model 6F11
	Knob	36K601054	Tone, Model 6F11
	Knob	36K601055	Tuning, Model 6F11
	Knob	36K601058	Volume, Model 6F11B
	Knob	36K601059	Phono-Radio, Model 6F11B
	Knob	36K601061	Tone, Model 6F11B
	Knob	36K601062	Tuning, Model 6F11B

SET 117 FOLDER 10

CHASSIS—BOTTOM VIEW



MOTOROLA MODEL 6F11

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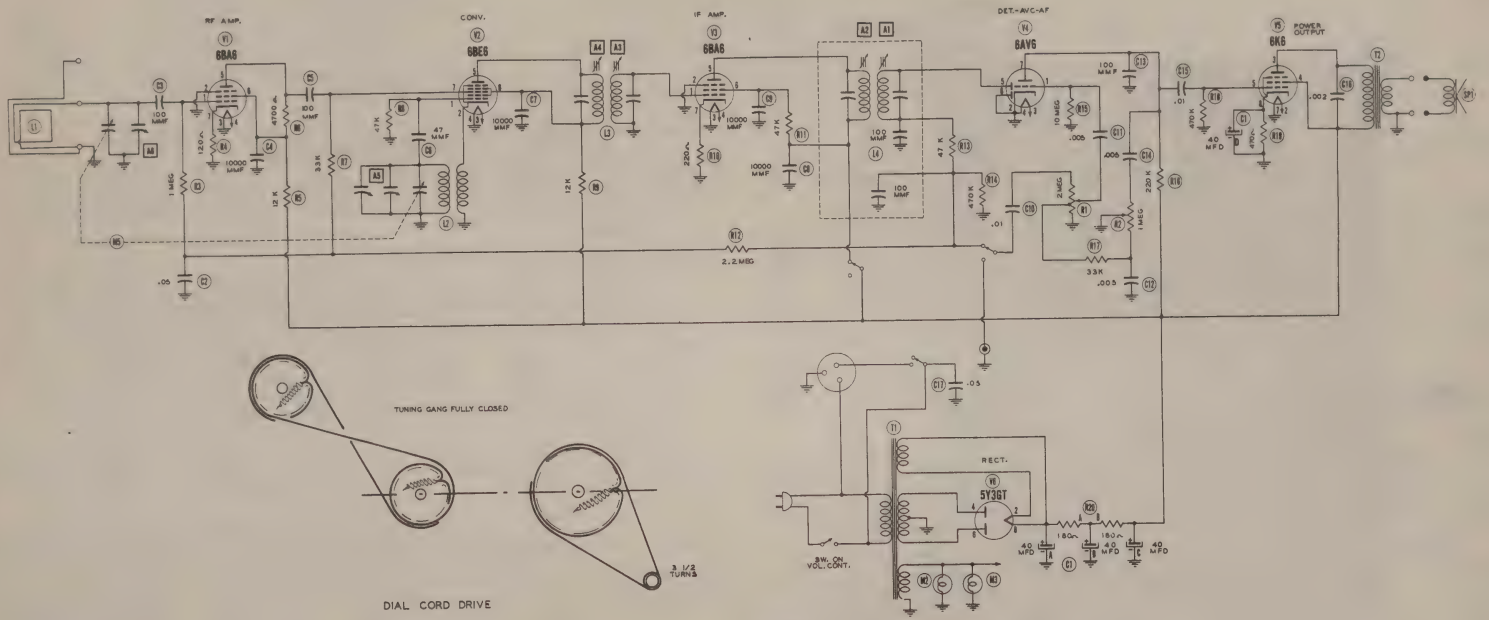
MOTOROLA MODEL 6F11



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VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	-.1VDC	0V.	0V.	6.3VAC	65VDC	80VDC	1.4VDC	
V 2	6BE6	3-6.6VDC	0V.	6.3VAC	0V.	100VDC	100VDC	-.4VDC	
V 3	6BA6	0V.	0V.	0V.	6.3VAC	230VDC	85VDC	2.2VDC	
V 4	6AV6	-.2VDC	0V.	6.3VAC	0V.	-.8VDC	0V.	85VDC	
V 5	6K6GT	0V.	6.3VAC	300VDC	230VDC	0V.	0V.	0V.	15VDC
V 6	5Y3GT	0V.	265VDC	117VAC	265VAC	0V.	265VAC	0V.	265VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	3.7 Meg.	0Ω	0Ω	.1Ω	117KΩ	112KΩ	130Ω	
V 2	6BE6	47KΩ	0Ω	.1Ω	0Ω	112KΩ	112KΩ	3.7 Meg.	
V 3	6BA6	1MΩ	0Ω	0Ω	.1Ω	130Ω	147KΩ	230Ω	
V 4	6AV6	3.10 Meg.	0Ω	.1Ω	0Ω	820KΩ	0Ω	220KΩ	
V 5	6K6GT	Inf.	.1Ω	110000	13500	470KΩ	0Ω	0Ω	470Ω
V 6	5Y3GT	Inf.	70KΩ	Inf.	1100	Inf.	100Ω	Inf.	70KΩ

† MEASURED FROM PIN 8 OF V6.

RADIO -PHONO SWITCH IN RADIO POSITION.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

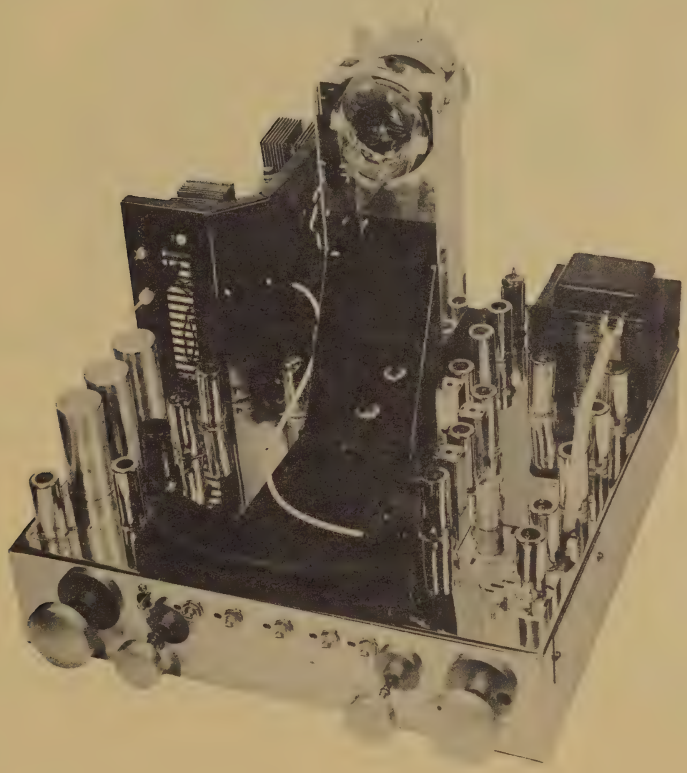
PHOTOFACT* Folder

RADIO CRAFTSMEN
MODEL RC-100A

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



RADIO CRAFTSMEN
MODEL RC-100A

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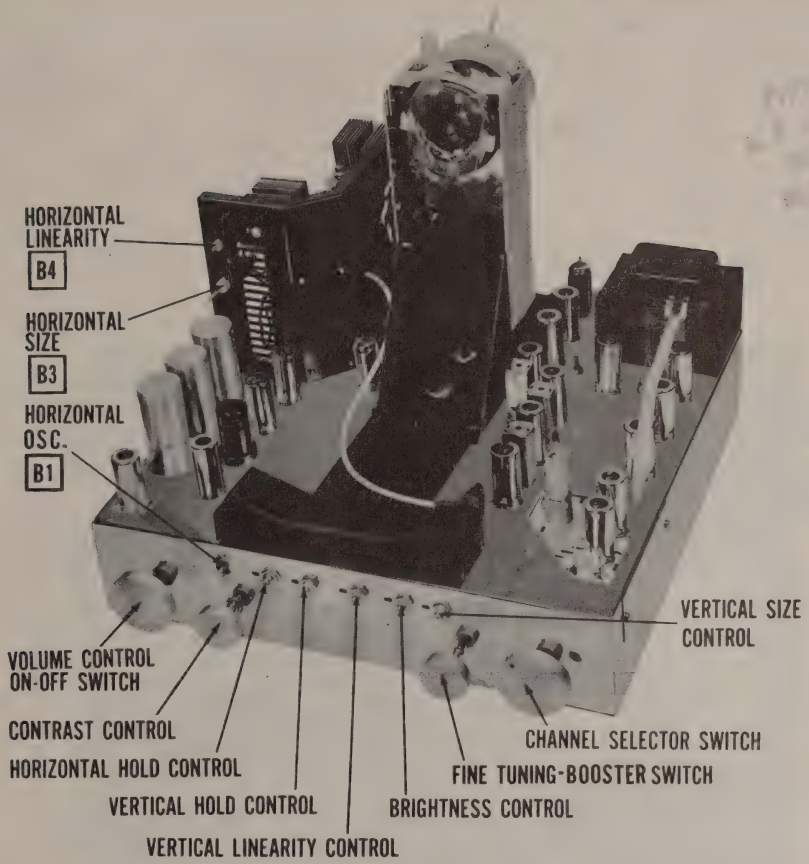
Date 12/50 Set No. 117—Folder No. 11



RADIO CRAFTSMEN
MODEL RC-100A

TRADE NAME	Radio Craftsmen, Model RC-100A
MANUFACTURER	The Radio Craftsmen Inc., 1617 S. Michigan Ave., Chicago 16, Illinois
TYPE SET	Televison Receiver
TUBES	Twenty Seven
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	1.7 Amp. at 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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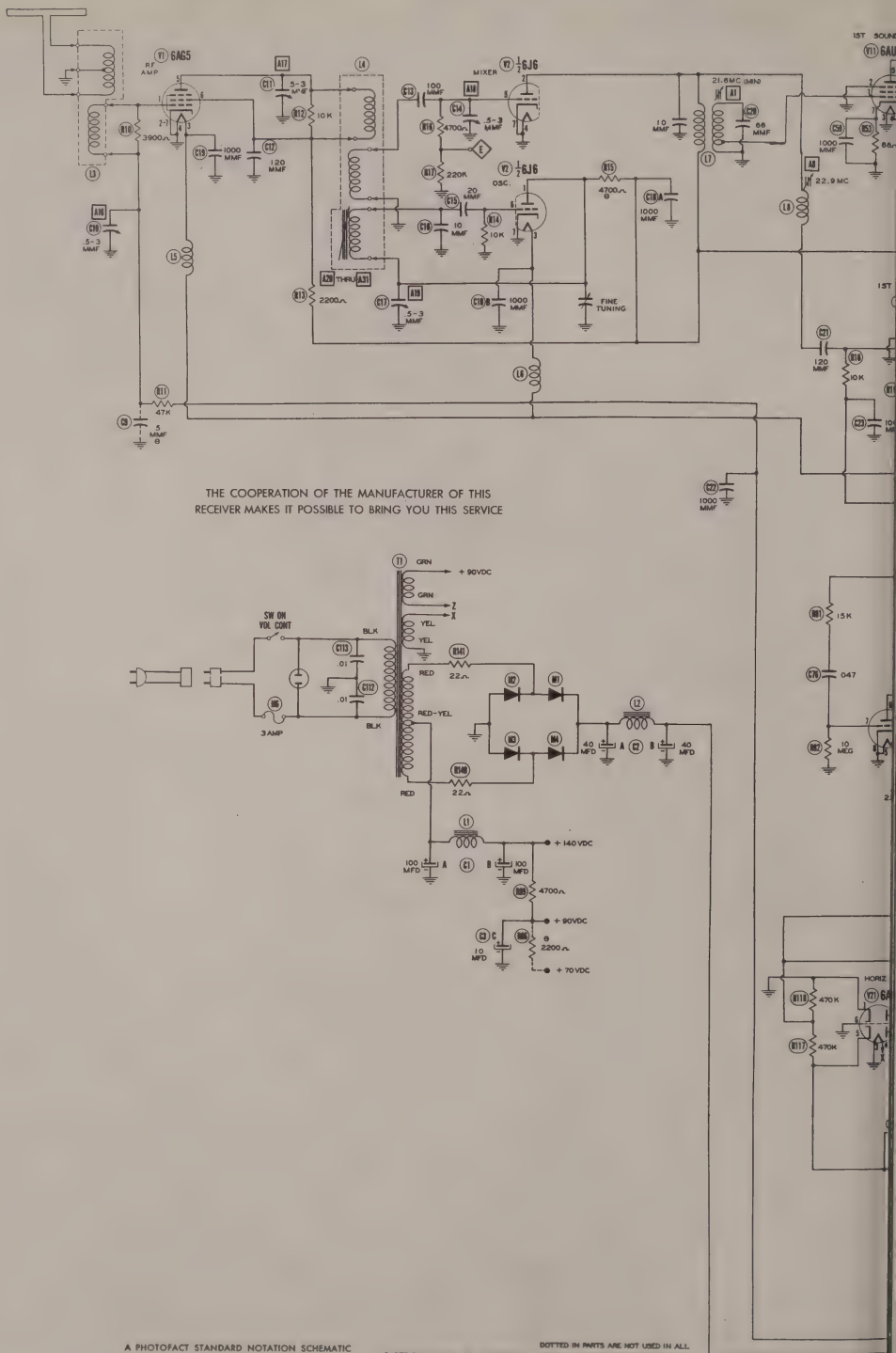

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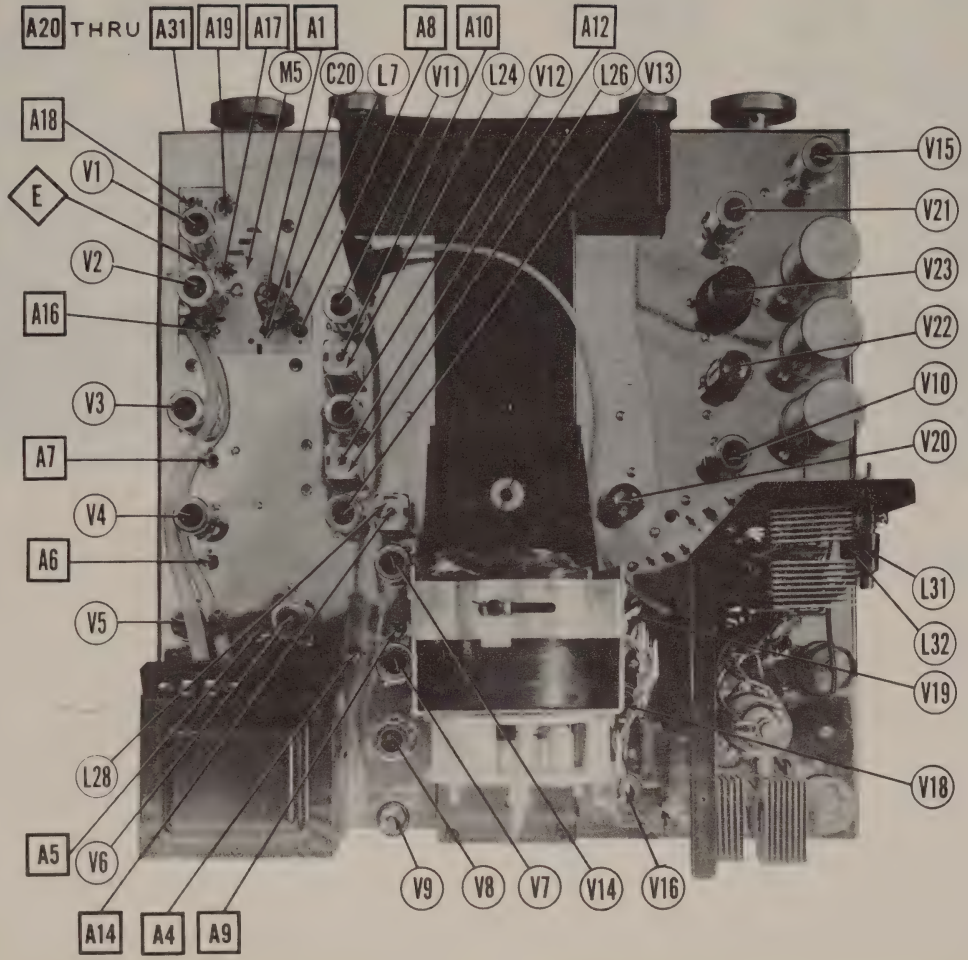
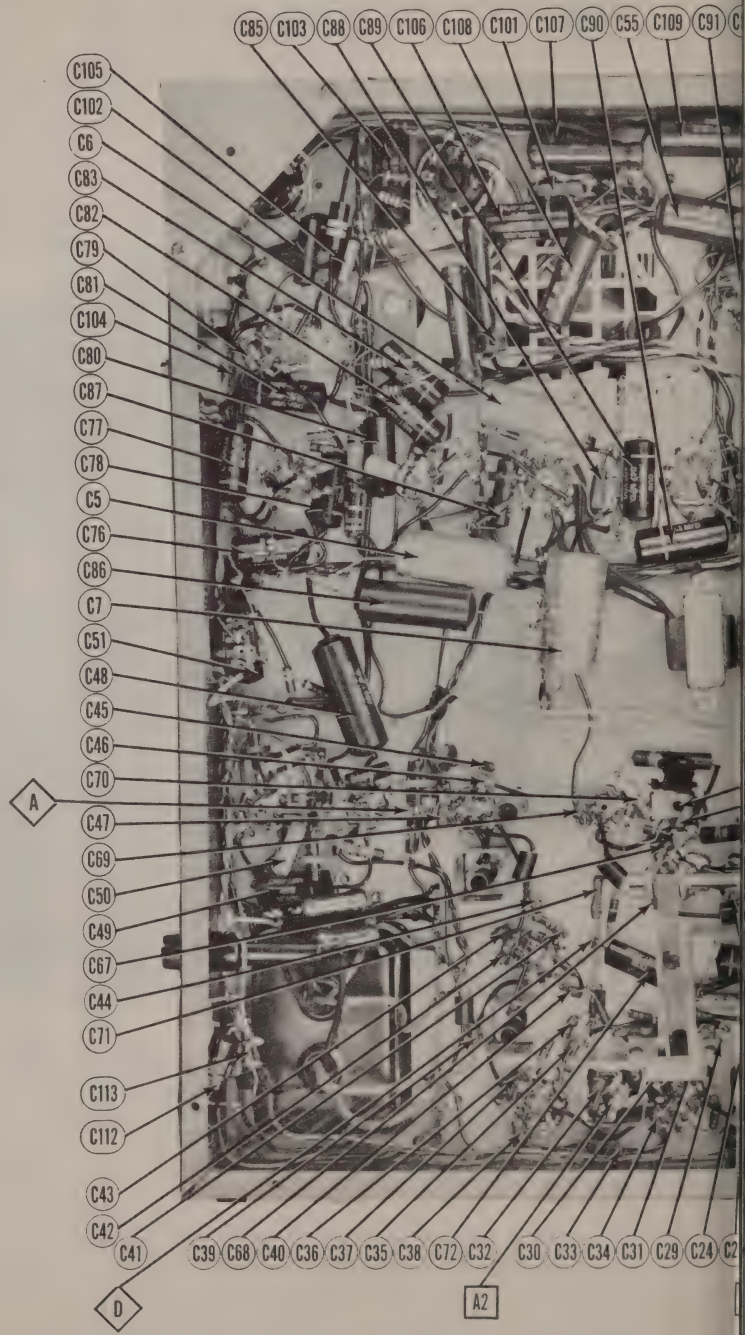
⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW- CAPACITOR

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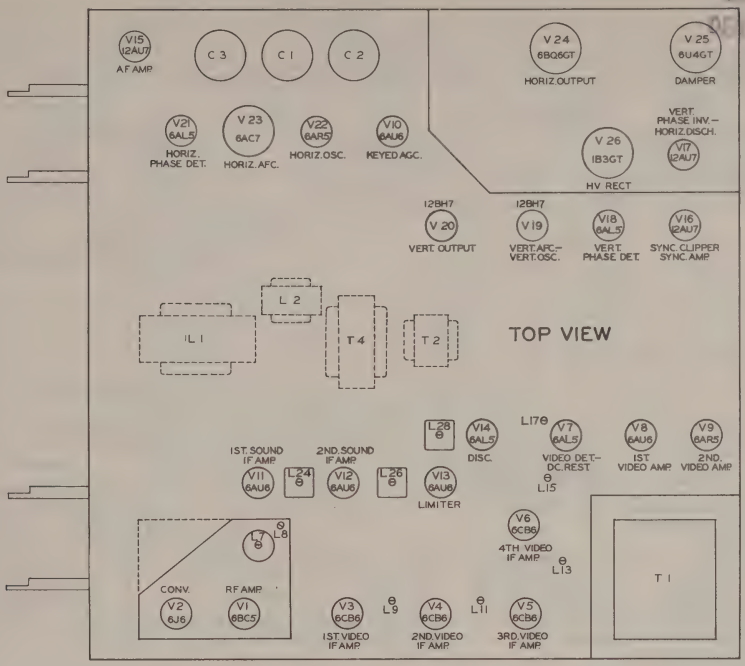
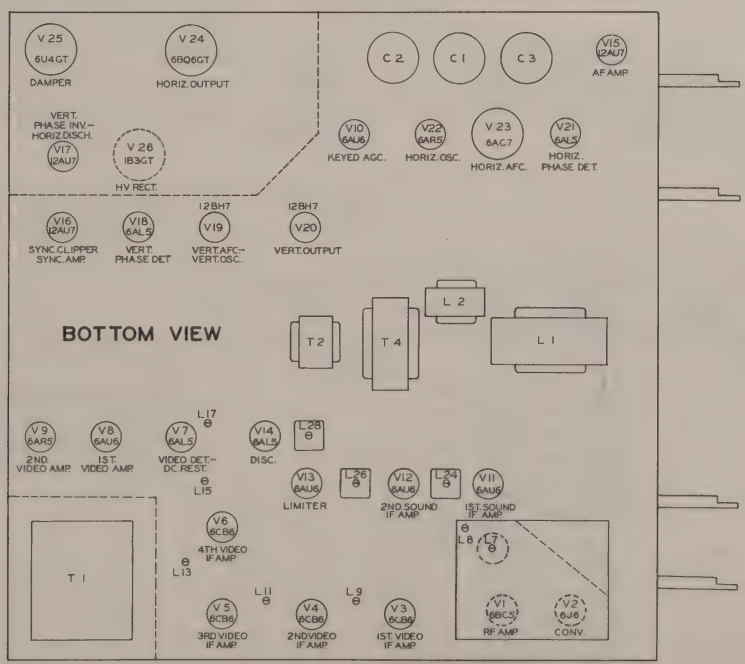




TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If receiver is to be aligned with picture tube removed, the high voltage lead should be securely taped and dressed away from the chassis.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 with pin 1 removed to prevent erroneous indications.
Connect the negative lead of a 3 volt battery to the junction of R78, R138 and C55. Connect the positive terminal to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	21.6MC (Unmod)	Any	DC Probe thru 22KΩ to Point (A). Common to chassis.	A1, A2	Adjust for MINIMUM deflection.
2.	Direct	"	20.1MC	"	"	A3	"
3.	Direct	"	23.9MC	"	"	A4	Adjust for maximum deflection. Attenuate signal generator to maintain a maximum 2 volt reading.
4.	Direct	"	25.6MC	"	"	A5	"
5.	Direct	"	23MC	"	"	A6	"
6.	Direct	"	25.5MC	"	"	A7	"
7.	Direct	"	22.7MC	"	"	A8	"
8.	Direct	"	4.5MC	"	"	A9	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	24MC (10MC SWP)	21.6MC 26.1MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. The 26.1MC marker should be at 50% of response. If necessary, slightly retouch A4 thru A8 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	21.6MC (Unmod.)	Any	DC Probe thru 10KΩ to Point (B). Common to chassis.	A10, A11, A12, A13	Adjust for maximum deflection.
11.	Direct	"	"	"	DC Probe thru 10KΩ to Point (C). Common to chassis.	A14	"
12.	Direct	"	"	"	DC Probe to Point (D). Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	21.6MC (450KC SWP)	21.6MC	Any	Vert. Amp. thru 22KΩ to Point (B). Low side to chassis.	A10, A11, A12, A13	Adjust for maximum amplitude and symmetry as per figure 2.
11.	Direct	"	"	"	"	Vert. Amp. to Point (D). Low side to chassis.	A14, A15	Adjust A15 to place 21.6MC at center of diagonal line as per figure 3. Adjust A14 for maximum amplitude and straightness of diagonal line. Continue with step 13.

RF ALIGNMENT

The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 150Ω carbon res.	Across antenna terminals with 150Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. Amp. to Point (E). Low side to chassis.	A16, A17, A18	Adjust for response curve similar to figure 4 with markers above 70%.
14.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all channels for response similar to figure 4. If markers fall below 70% on any channel, make slightly adjustment of A16, A17 and A18 with selector switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace original 6J6 in its socket.

Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency for a majority of the channels, it may be possible to correct them in one step using A19. If should be noted that this is an all channel oscillator circuit adjustment, and should not be adjusted for any individual channel. If adjustment of A19 will not bring all channels within the range of the fine tuning control, it will be necessary to adjust the individual channel oscillator adjustment for each channel that is off frequency. The individual channel oscillator adjustments are reached through a hole just to the right of the channel switch shaft.

The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
15.	Two 150Ω carbon res.	Across antenna terminals with 150Ω in each lead.	215.75MC (Unmod.)	13	DC Probe to Point ◇. Common to chassis.	A20	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
			209.75MC	12		A21	
			203.75MC	11		A22	
			197.75MC	10		A23	
			191.75MC	9		A24	
			185.75MC	8		A25	
			179.75MC	7		A26	
			87.75MC	6		A27	
			81.75MC	5		A28	
			71.75MC	4		A29	
			65.75MC	3		A30	
			59.75MC	2		A31	

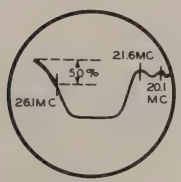


FIG. 1

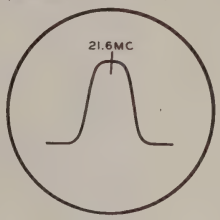


FIG. 2

FIG. 3

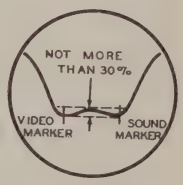


FIG. 4

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	-.4VDC	0V.	6.3VAC	0V.	100VDC	100VDC	0V.		
V 2	6J6	75VDC	130VDC	6.3VAC	0V.	-1.5VDC	§-2.4VDC	0V.		
V 3	6CB6	-.5VDC	1VDC	0V.	6.3VAC	110VDC	110VDC	0V.		
V 4	6CB6	-.3VDC	1VDC	6.3VAC	0V.	110VDC	110VDC	0V.		
V 5	6CB6	-.3VDC	.6VDC	6.3VAC	0V.	110VDC	120VDC	0V.		
V 6	6CB6	0V.	2.3VDC	6.3VAC	0V.	95VDC	120VDC	0V.		
V 7	6AL5	0V.	0V.	6.3VAC	0V.	1.1VDC	0V.	-3.2VDC		
V 8	6AU6	-1.4VDC	0V.	6.3VAC	0V.	125VDC	80VDC	0V.		
V 9	6AR5	2.5VDC	35VDC	0V.	6.3VAC	85VDC	140VDC	85VDC		
V 10	6AU6	120VDC	140VDC	♦6.3VAC	♦0V.	-.3VDC	250VDC	140VDC		
V 11	6AU6	0V.	0V.	0V.	6.3VAC	120VDC	120VDC	1VDC		
V 12	6AU6	0V.	0V.	0V.	6.3VAC	125VDC	125VDC	1VDC		
V 13	6AU6	-.4VDC	0V.	0V.	6.3VAC	60VDC	60VDC	0V.		
V 14	6AL5	.2VDC	-.7VDC	6.3VAC	0V.	0V.	0V.	-.7VDC		
V 15	12AU7	100VDC	2.5VDC	20VDC	♦0V.	♦0V.	45VDC	.4VDC	9VDC	♦6.3VAC
V 16	12AU7	65VDC	-.6VDC	0V.	0V.	0V.	17VDC	-2.7VDC	0V.	6.3VAC
V 17	12AU7	130VDC	0V.	6.6VDC	0V.	0V.	170VDC	-33VDC	0V.	6.3VAC
V 18	6AL5	2.6VDC	-2.6VDC	6.3VAC	0V.	-.3VDC	0V.	-.3VDC		
V 19	12BH7	5.6VDC .7VDC	-.3VDC	.4VDC	0V.	0V.	120VDC 6.5VDC	-9.2VDC -1.5VDC	0V.	6.3VAC
V 20	12BH7	440VDC	0V.	32VDC 15VDC	6.3VAC	6.3VAC	440VDC	0V.	32VDC 15VDC	0V.
V 21	6AL5	0V.	-6.2VDC	0V.	6.3VAC	.2VDC	0V.	-6.2VDC		
V 22	6AR5	-20VDC -15VDC	.4VDC	0V.	6.3VAC	240VDC	140VDC	0V.		
V 23	6AC7	0V.	0V.	1.4VDC	0V.	1.4VDC	80VDC	6.3VAC	270VDC	
V 24	6BQ6GT	535VDC	6.3VAC	0V.	110VDC	-27VDC	0V.	0V.	.5VDC	TOP CAP •
V 25	6U4GT	0V.	0V.	540VDC	0V.	320VDC	0V.	♦6.3VAC	♦0V.	
V 26	1B3GT		• DO NOT MEASURE.							
V 27	16GP4	0V.	-1.3VDC	PIN 10 320VDC	PIN 11 75VDC 4VDC	PIN 12 6.3VAC				

RESISTANCE READINGS

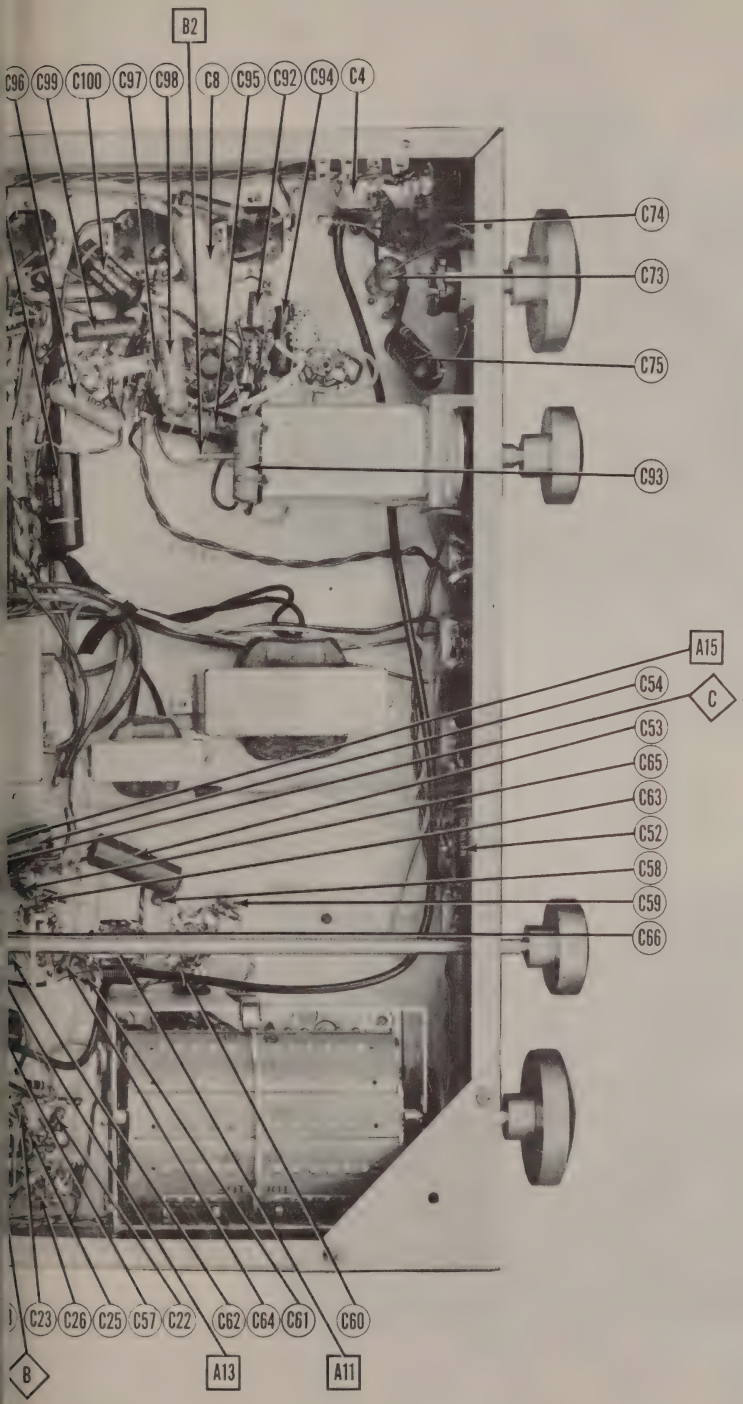
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	140KΩ	0Ω	.1Ω	0Ω	†2.4KΩ	†2.4KΩ	0Ω		
V 2	6J6	†4.9KΩ	†220Ω	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6CB6	110KΩ	68Ω	0Ω	.1Ω	%†1.6KΩ	†1.6KΩ	0Ω		
V 4	6CB6	110KΩ	68Ω	.1Ω	0Ω	†1.4KΩ	†1.4KΩ	0Ω		
V 5	6CB6	105KΩ	68Ω	.1Ω	0Ω	†4.6KΩ	†1.3KΩ	0Ω		
V 6	6CB6	.1Ω	270Ω	.1Ω	0Ω	†5.8KΩ	†1.1KΩ	0Ω		
V 7	6AL5	.1Ω	0Ω	.1Ω	0Ω	1 Meg.	0Ω	4000Ω		
V 8	6AU6	4000Ω	0Ω	.1Ω	0Ω	†4KΩ	†5.5KΩ	0Ω		
V 9	6AR5	1 Meg.	1.7KΩ	0Ω	.1Ω	†3.3KΩ	†0Ω	†3.3KΩ		
V 10	6AU6	†37KΩ	†0Ω	♦.2Ω	♦0Ω	80KΩ	#15KΩ	†0Ω		
V 11	6AU6	0Ω	0Ω	0Ω	.1Ω	†1.2KΩ	†1.2KΩ	68Ω		
V 12	6AU6	100KΩ	0Ω	0Ω	.1Ω	†1000Ω	†1000Ω	68Ω		
V 13	6AU6	150KΩ	0Ω	0Ω	.1Ω	†6KΩ	†6KΩ	0Ω		
V 14	6AL5	200KΩ	100KΩ	.1Ω	0Ω	0Ω	0Ω	100KΩ		
V 15	12AU7	†10KΩ	475KΩ	5.2KΩ	♦0Ω	♦0Ω	†230KΩ	1 Meg.	20KΩ	♦.2Ω
V 16	12AU7	♦6.8KΩ	1 Meg.	0Ω	0Ω	0Ω	♦35KΩ	10 Meg.	0Ω	.1Ω
V 17	12AU7	†3.3KΩ	220KΩ	2.2KΩ	0Ω	0Ω	▲230KΩ	220KΩ	0Ω	.1Ω
V 18	6AL5	1.5 Meg.	1.2 Meg.	.1Ω	0Ω	70KΩ	0Ω	70KΩ		
V 19	12BH7	#1.2 Meg. #1.6 Meg.	70KΩ	2000Ω	0Ω	0Ω	#1 Meg. #2 Meg.	2.4 Meg. 2.6 Meg.	0Ω	.1Ω
V 20	12BH7	▲11KΩ	2.2 Meg.	5.7KΩ 680Ω	.1Ω	.1Ω	▲11KΩ	2.2 Meg.	5.7KΩ 680Ω	0Ω
V 21	6AL5	0Ω	470KΩ	0Ω	.1Ω	940KΩ	0Ω	470KΩ		
V 22	6AR5	22KΩ 70KΩ	16Ω	0Ω	.1Ω	#5KΩ	†0Ω	Inf.		
V 23	6AC7	0Ω	0Ω	470Ω	1.4 Meg.	480Ω	†12KΩ	.1Ω	#22KΩ	
V 24	6BQ6GT	▲32Ω	.1Ω	Inf.	#15KΩ	470KΩ	Inf.	0Ω	3.5Ω	TOP CAP ▲115Ω
V 25	6U4GT	7.5KΩ	Inf.	160KΩ	Inf.	#13Ω	Inf.	▲.2Ω	▲0Ω	
V 26	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ▲515Ω
V 27	16GP4	0Ω	1.1 Meg.	PIN 10 #1000Ω	PIN 11 190KΩ 270KΩ	PIN 12 .1Ω				

§ TAKEN WITH VACUUM TUBE VOLTMETER.
♦ MEASURED FROM 90VDC LINE.
• DO NOT MEASURE.

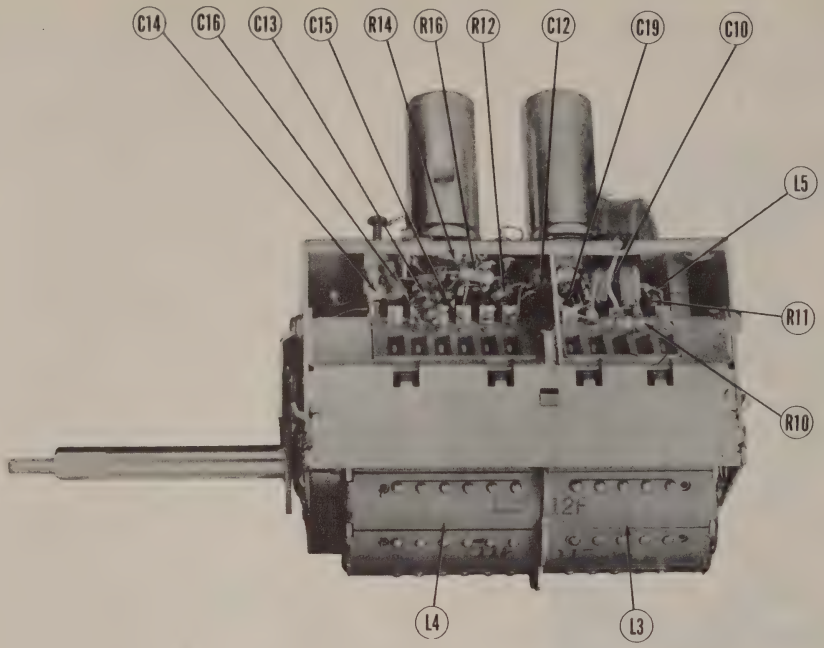
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

† MEASURED FROM 140VDC LINE.
▲ MEASURED FROM PIN 3 OF V25.
♦ MEASURED FROM 90VDC LINE.
MEASURED FROM JUNCTION OF L2 & C2B.

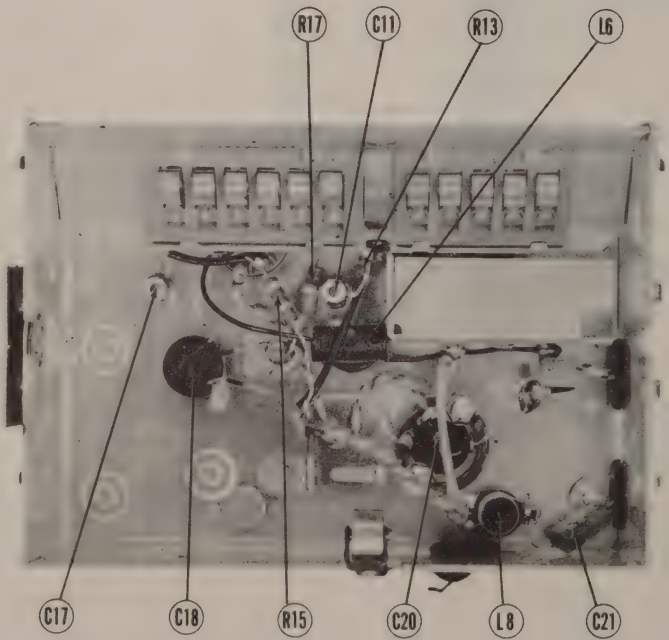
PROPERTY OF
U. P. ELECTRONICS SHOP
3514 MEDAL ST.
DENVER, COLORADO



.ND ALIGNMENT IDENTIFICATION

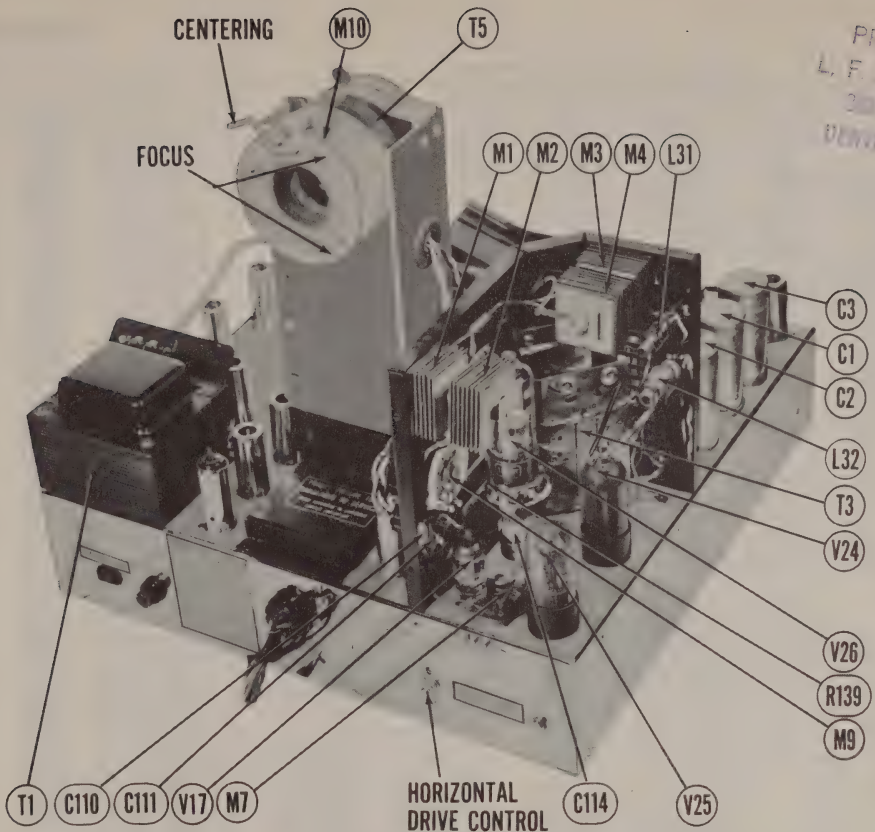


RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

PROPERTY OF
L. F. BLANKENSHIP
2814 WADE ST.
DENVER, COLORADO



CHASSIS-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ALIGNMENT

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range and adjust the horizontal frequency slug (B1) until picture synchronizes horizontally.

If the horizontal blanking bar appears in the picture, or if ripples occur in the raster adjust the horizontal phasing slug (B2) until the unstable condition is removed.

HORIZONTAL LINEARITY ADJUSTMENT

Turn the horizontal drive control clockwise as far as possible without crowding the right side of the picture.

Adjust horizontal size slug (B3) until the picture fills the mask horizontally.

Adjust the horizontal linearity slug (B4) until picture is symmetrical from left to right. A slight readjustment of the horizontal drive control may be necessary for optimum results.

FOCUS ADJUSTMENT

There are two focus adjustment screws on rear of the Focus magnet. Adjust either focus screw (B5) for sharpest trace lines. Do not unscrew either screw so that it extends more than 3/8 inch beyond the rear of the focus magnet.

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Radio Craftsmen PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6BC5	6BC5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF Amp.	6CB6	6CB6	6CK	
V4	2nd Video IF Amp.	6CB6	6CB6	6CK	
V5	3rd Video IF Amp.	6CB6	6CB6	6CK	
V6	4th Video IF Amp.	6CB6	6CB6	6CK	
V7	Video Det. - DC Restorer	6AL5	6AL5	6BT	
V8	1st Video Amp.	6AU5	6AU5	7BK	
V9	2nd Video Amp.	6AR6	6AR6	6CC	
V10	Keyed AGC	6AU6	6AU6	7BK	
V11	1st Sound IF Amp.	6AU6	6AU6	7BK	
V12	2nd Sound IF Amp.	6AU6	6AU6	7BK	
V13	Limiter	6AU6	6AU6	7BK	
V14	Discriminator	6AL5	6AL5	6BT	
V15	AF Amp.	12AU7	12AU7	9A	
V16	Sync. Clipper-Sync. Amp.	12AU7	12AU7	9A	
V17	Vert. Phase Inv.-Hor. Disch.	12AU7	12AU7	9A	
V18	Vert. Phase Det.	6AL5	6AL5	6BT	
V19	Vert. AFC-Osc.	12BH7	12BH7	9A	
V20	Vert. Output	12BH7	12BH7	9A	
V21	Hor. Phase Det.	6AL5	6AL5	6BT	
V22	Hor. Osc.	6AR5	6AR5	6CC	
V23A	Hor. AFC	6AC7	6AC7	8N	
B	Hor. AFC	6AH6	6AH6	7BK	
V24	Hor. Output	6BQ6GT	6BQ6GT	6AM	
V25	Damper	6U4GT	6U4GT	4CG	
V26	HV Rect.	1B3GT	1B3GT	3C	
V27A	Picture Tube	16GP4	16GP4	12D	
B	Picture Tube	16TP4	16TP4	12D	
C	Picture Tube	19AP4	19AP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Radio Craftsmen PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	100	200	18S011	AFH1616G		UPE101020		TVL-2535	▲ Filter
B	100	200							▬ Filter
C2A	40	400	18S010	AF88J		UPT4445		TVL-2764	▬ Filter
B	40	400							▲ Filter
C3A	10	525	18S012	AF2W8E2D		UPT306		TVL-3772	▬ Vert. Output Dec.
B	40	200							■ Decoupling
C	10	150							▲ Decoupling
C4	50	50	18X016	PRS50/50		BR505		TVA-1308	Audio Coupling
C5A	1	6	18X014			BR145		TVA-1203	Vert. AFC Filter
B	5	6				BBR5-50		TVA-1300	Vert. AFC Filter
C6	.5@15750~		18X020	PRS6/250		BRH601		TVA-1104	Vert. AFC Cath.
C7	100	50	18X013	PRS50/100		BRH501		TVA-1310	Vert. Output Cath.
C8	.5@15750~		18X021	PRS6/250		BRH601		TVA-1104	Hor. AFC Cath.
C9	5		18X615	5I5NPO	TCZ-4.7		NPOK-5		Fixed Trimmer *
C10	.5-3		17X401		829-3				Variable Trimmer
C11	.5-3		17X401		829-3				Variable Trimmer
C12	120			5I120	D6-121		GP2K-120	19C29	RF Amp. Decoupling
C13	100		18X605	5I100N750	TCN-100		N750L-100	29C16	RF Coupling
C14	.5-3		17X401		829-3				Variable Trimmer
C15	20		18X603	5I20NPO	TCZ-20		NPOK-20		Osc. Grid Cap.
C16	10		18X601	5I10N750	TCN-10		N750K-10	19C4	Fixed Trimmer
C17	.5-3		17X401		829-3				Variable Trimmer
C18A	1000		18X614	BPD-2X001	DD-2-102		882-2X0015	29C7	RF Bypass
B	1000		18X614						Conv. Fil. Bypass
C19	1000		18X614		D8-102		811-001	19C1	RF Amp. Fil. Bypass
C20	68	500	18X617		TCZ-68		NPOM-68	36C9	Fixed Trimmer
C21	120	500		5I120	D6-121	5W5T15	GP2K-120	19C29	IF Coupling
C22	1000		18X614	5I1000	D6-102	1W5D1	GP2L-001	29C21	AGC-Filter
C23	1000		18X614	5I1000	D6-102	1W5D1	GP2L-001	29C21	AGC Filter
C24	1000		18X614	5I1000	D6-102	1W5D1	GP2L-001	29C21	RF Bypass
C25	1000		18X614	5I1000	D6-102	1W5D1	GP2L-001	29C21	1st V. IF Decoup.
C26	1000		18X614	5I1000	D6-102	1W5D1	GP2L-001	29C21	1st V. IF Fil.
C27	100	500	18X402	1469-0001	TCZ-100	5R5T1	NPOM-100	36C10	Fixed Trimmer
C28	100		18X605	5I100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C29	1000		18X614	5I1000	D6-102	1W5D1	GP2L-001	29C21	AGC Filter
C30	1000		18X614	5I1000	D6-102	1W5D1	GP2L-001	29C21	RF Bypass
C31	1000		18X614	5I1000	D6-102	W5D1	GP2L-001	29C21	2nd V. IF Decoup.
C32	100	500	18X402	1469-0001	TCZ-100	5R5T1	NPOM-100	36C10	Fixed Trimmer
C33	100		18X605	5I100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C34	1000		18X614	5I1000	D6-102	1W5D1	GP2L-001	29C21	2nd V. IF Fil.
C35	1000		18X614	5I1000	D6-102	1W5D1	GP2L-001	29C21	AGC Filter
C36	1000		18X614	5I1000	D6-102	1W5D1	GP2L-001	29C21	RF Bypass
C37	1000		18X614	5I1000	D6-102	1W5D1	GP2L-001	29C21	3rd V. IF Decoup.
C38	1000		18X614	5I1000	D6-102	1W5D1	GP2L-001	29C21	3rd V. IF Fil.
C39	100		18X605	5I100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C40	1000		18X614	5I1000	D6-102	1W5D1	GP2L-001	29C21	RF Bypass
C41	1000		18X614	5I1000	D6-102	1W5D1	GP2L-001	29C21	4th V. IF Decoup.
C43	1000		18X614	5I1000	D6-102	1W5D1	GP2L-001	29C21	4th V. IF Cath.
C43	1000		18X614	5I1000	D6-102	1W5D1	GP2L-001	29C21	4th V. IF Fil.
C44	100		18X605	5I100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C45	5		18X615	5I5	TCZ-4.7	5W5V5	GP1K-5	MS-55	V. Diode Filter
C46	47	500	18X408	1469-00005	TCZ-47	5R5Q5	NPOM-50	MS-45	Fixed Trimmer
C47	1000		18X614	5I1000	D6-102	1W5D1	GP2L-001	29C21	V. Det.-DC Rest. Fil.
C48	.47	200	18Z382	P288-47		GT2P5		2TM-P47	1st V. Amp. Screen
C49	.047	400	18Z354	P488-047	DF-503	PTE485		4TM-S47	Video Coupling
C50	560	500	18X406	5I560	D8-561	1W5T6	GP2K-560	M3-36	2nd V. Amp. Cath.
C51	.047	400	18Z354	P488-047	DF-503	PTE485		4TM-S47	Video Coupling
C52	.1	400	18Z264	P488-1	DF-104	PTE4P1		4TM-P1	Pic. Tube Cath. Dec.
C53	.047	600	18Z256	P688-047	DF-503	PTE685		6TM-S47	Integrator Net
C54	.022	400	18Z344	P488-022	DF-303	PTE483		4TM-S22	Vert. Sync. Coup.
C55	.47	300	18Z382	P288-47		GT2P5		2TM-P47	AGC Filter †

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Radio Craftsmen PART No.	AEROVOX PART No.	CEN PA
C56	.1	400	18Z264	P488-1	DF
C57	.047	400	18Z254	P488-047	DF
C58	1000		18X614	S11000	D6
C59	1000		18X614	S11000	D6
C60	1000		18X614	S11000	D6
C61	47		18X604	S147	D6
C62	1000		18X614	S11000	D6
C63	1000		18X614	S11000	D6
C64	1000		18X614	S11000	D6
C65	1000		18X614	S11000	D6
C66	22		18X603	S122	D6
C67	1000		18X614	S11000	D6
C68	1000		18X614	S11000	D6
C69	1000		18X614	S11000	D6
C70	100		18X605	S1100	D6
C71	1500		18X607	S11500	D6
C72	.022	400	18Z244	P488-022	DF
C73	.047	400	18Z254	P488-047	DF
C74	.022	400	18Z244	P488-047	DF
C75	.047	400	18Z254	P488-047	DI
C76	.047	400	18Z254	P488-047	DI
C77	.047	400	18Z254	P488-047	DI
C78	.047	400	18Z254	P488-047	DI
C79	1500		18X607	S11500	D6
C80	.047	400	18Z254	P488-047	DI
C81	.047	400	18Z254	P488-047	DI
C82	.047	400	18Z254	P488-047	DI
C83	.047	400	18Z254	P488-047	DI
C84	.1	400	18Z264	P488-1	DI
C85	1000	500	18X409	1468-001	D6
C86	.22	400	18Z274	P488-22	
C87	.01	400		P488-01	D6
C88	1000	500	18X409	1467-001	D6
C89	.047	400	18Z254	P488-047	DI
C90	.1	400	18Z264	P488-1	DI
C91	.033	600	18X303	P688-033	
C92	100	500	18X402	1468-0001	D6
C93	.01	400	18Z234	P488-01	
C94	.0047	400	18Z224	P688-0047	D6
C95	.047	400	18Z254	P488-047	DI
C96	.005	600	18Z224	P688-005	D6
C97	470		18X619	S1470	D6
C98	.01	400	18Z234	P488-01	D6
C99	.0047	400	18Z224	P688-0047	D6
C100	.047	400	18Z254	P488-047	DI
C101	470	500	18X403	1468-0005	D6
C102	.01	400	18Z234	P488-01	D6
C103	.1	400	18Z268	P488-1	DI
C104	2000	500	18X413	1464-002	
C105	1000	500	18X509	1468-001	D6
C106	.1	400	18Z264	P488-1	DI
C107	.033	600	18X303	P688-033	
C108	.047	600	18Z256	P688-047	
C109	.47	200	18Z282	P288-47	
C110	220	1500			
C111	220	1500			
C112	.01	600	18Z236	P688-01	D6
C113	.01	600	18Z236	P688-01	D6
C114	500	20000	18X613	HV20C	TV

* Not used in all models.
† Some models use .22MFD in this application

ITEM No.	RATING: RESIST-ANCE	RATING: WATTS	REPLACEMENT DATA: Radio Craft. PART No.	IRC PART No.
R1A	500KΩ	½	23S706	Q13-133X
B	Shaft		Not Req.	Not Req.
C	Switch		Not Req.	76-1
R2	1500Ω	2	23S714	WK-1500
R3A	50KΩ	½	23S708	Q11-123
B	Shaft		Not Req.	RQ
R4A	1 Meg.	½	23S711	Q11-137
B	Shaft		Not Req.	RQ
R5A	5000Ω	½	23S712	Q11-114
B	Shaft		Not Req.	RQ
R6A	100KΩ	½	23S707	Q11-128
B	Shaft		Not Req.	RQ
R7A	2 Meg.	½	23S709	Q11-139
B	Shaft		Not Req.	RQ
R8A	25KΩ	½	23S710	Q11-120
B	Shaft		Not Req.	RQ
R9	2000Ω	1		

* File slot in shaft to duplicate original.
Note 1. - Not used in all Models.

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RADIO CRAFTSMEN PART No.	IRC PART No.
R10	3900Ω	½		BTS-3900
R11	47KΩ 20%	½		
R12	10KΩ	½		
R13	2200Ω 20%	½		BTS-2200
R14	10KΩ	½		
R15	4700Ω	½		BTS-4700
R16	4700Ω	½		BTS-4700
R17	220KΩ 20%	½		
R18	10KΩ	½	23Z004	
R19	68Ω	½	23Z061	
R20	1000Ω	½	23Z003	BTS-1000

) DESCRIPTIONS

RS (CONT.)

T DATA — CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
PTE4P1		4TM-P1	AGC Filter
PTE4S5		4TM-S47	AGC Filter
1W5D1	GP2L-001	29C21	1st S. IF Decoup.
1W5D1	GP2L-001	29C21	1st S. IF Cath.
1W5D1	GP2L-001	29C21	1st S. IF Fil.
5W5Q5	GP1K-47	19C25	2nd S. IF Grid
1W5D1	GP2L-001	29C21	2nd S. IF Decoup.
1W5D1	GP2L-001	29C21	2nd S. IF Cath.
1W5D1	GP2L-001	29C21	2nd S. IF Fil.
1W5D1	GP2L-001	29C21	RF Bypass
5W5Q25	GP1K-22	19C23	Limiter Grid Filter
1W5D1	GP2L-001	29C21	Limiter Screen
1W5D1	GP2L-001	29C21	Limiter Fil.
1W5D1	GP2L-001	29C21	PM Disc. Fil.
5W5T1	GP1K-100	19C11	RF Bypass
1W5D15	GP2L-0015	19C20	De-emphasis
PTE4S2		4TM-S22	Audio Coupling
PTE4S5		4TM-S47	Audio Coupling
PTE4S2		4TM-S22	Audio Coupling
PTE4S5		4TM-S47	Tone Comp.
PTE4S5		4TM-S47	Sync. Coupling
PTE4S5		4TM-S47	Sync. Coupling
PTE4S5		4TM-S47	Vert. Sync. Coup.
1W5D15	GP2L-0015	19C20	Voltage Divider
PTE4S5		4TM-S47	Vert. Sync. Coupling
PTE4S5		4TM-S47	Vert. Sync. Coupling
PTE4S5		4TM-S47	Vert. Sync. Coupling
PTE4S5		4TM-S47	Vert. Sync. Coupling
PTE4P1		4TM-P1	Vert. Feedback *
1W5D1	GP2L-001	1FM-21	Integrator Net *
GT4P25		4TM-P22	Vert. AFC Plate Dec.
PTE4S1	811-01	4TM-S1	AFC Filter
1W5D1	GP2L-001	1FM-21	Vert. Osc. Grid
PTE4S5		4TM-S47	Vert. Discharge
PTE4P1		4TM-P1	Vert. Sweep Coup.
PTE6S3		6TM-S3	Fixed Trimmer
5W5T1	GP1K-100	1FM-31	Hor. Sync. Coup.
PTE4S1		4TM-S1	Fixed Trimmer
PTE6D5	GP2M-0047	6TM-D47	AFC Filter
PTE4S5		4TM-S47	AFC Filter
PTE6D5	811-005	6TM-D5	Hor. Osc. Grid Cap.
5W5T5	GP2K-470	19C15	Phase Shifter
PTE4S1	811-01	4TM-S1	Phase Shifter
PTE6D5	GP2M-0047	6TM-D47	Hor. AFC Coupling
PTE4S5		4TM-S47	Hor. AFC Screen
5W5T5	GP2K-470	1FM-35	Differentiater Net
PTE4S1	811-01	4TM-S1	Differentiater Net
PTE4P1		4TM-P1	Hor. Disch. Plate Dec.
IR5D2		MS-22	Hor. Discharge
1W5D1	GP2L-001	1FM-21	Hor. Sweep Coupling
PTE4P1		4TM-P1	Hor. Output Screen
PTE6S3		6TM-S3	Damper Filter
PTE6S5		6TM-S47	Damper Filter
GT2P5		2TM-P47	Hor. Sweep Coupling
			Fixed Trimmer *
			Fixed Trimmer *
PTE6S1	811-01	6TM-S1	Line Filter
PTE6S1	811-01	6TM-S1	Line Filter
			H. V. Filter

TROLS

TAT No.	CENTRALAB PART No.	INSTALLATION NOTES
	BT-67-S	Volume Control - Tapped@ 150KΩ
	Not Req.	Attach to R1A per instructions
	Not Req.	Attach to R1A per instructions
	VK-130	Contrast Control - Wirewound
	AN-31	Horiz. Hold Control
	AK-1	Attach to R3A per instructions
	AN-69	Vert. Hold Control
	AK-1	Attach to R4A per instructions
	AN-10	Vert. Linearity Control
	AK-1	Attach to R5A per instructions
	B-40*	Brightness Control
	Not Req.	Attach to R6A per instructions
	B-75 *	Vert. Size Control
	Not Req.	Attach to R7A per instructions
	AN-26	Horiz. Drive Control
	AK-1	Attach to R8A per instructions
		Vert. Peaking Control - Wirewound
		See Note 1

TORS

IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED
F Amp. Grid Coil Shunt
GC Network
F Amp. Plate Coil Shunt
F Amp. Decoupling
scillator Grid
scillator Plate - See Note 2
onverter Grid
onverter Grid
d Video IF Amp. Grid
d Video IF Amp. Cathode
d Video IF Amp. Decoupling

RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	Radio Craftsmen PART No.	IRC PART No.	
R21	1000Ω	½	23Z003	BTS-1000	AGC Network
R22	10KΩ	½	23Z004		2nd Video IF Amp. Grid
R23	68Ω	½	23Z061		2nd Video IF Amp. Cathode
R24	1000Ω	½	23Z003	BTS-1000	2nd Video IF Amp. Decoupling
R25	150Ω 20%	½	23Z012	BTS-150	Decoupling
R26	1000Ω	½	23Z003	BTS-1000	AGC Network
R27	4700Ω	½	23Z043	BTS-4700	3rd Video IF Amp. Grid
R28	68Ω	½	23Z061		3rd Video IF Amp. Cathode
R29	3300Ω	½	23Z033	BTS-3300	3rd Video IF Amp. Plate
R30	1000Ω	½	23Z003	BTS-1000	3rd Video IF Amp. Decoupling
R31	150Ω 20%	½	23Z012	BTS-150	Decoupling
R32	330Ω 20%	½	23Z032	BTS-330	4th Video IF Amp. Cathode - See Note 3
R33	2200Ω	½	23Z023	BTS-2200	4th Video IF Amp. Cathode - See Note 3
R34	4700Ω	½	23Z043	BTS-4700	4th Video IF Amp. Plate
R35	1000Ω	½	23Z003	BTS-1000	4th Video IF Amp. Decoupling
R36	150Ω 20%	½	23Z012	BTS-150	Decoupling
R37	150Ω 20%	½	23Z012	BTS-150	Decoupling
R38	4000Ω	½	23X071	BTS-3900	Video Det. Diode Load
R39	15KΩ	1	23Z114	BTA-15K	Voltage Divider
R40	6800Ω 20%	½	23Z063	BTS-6800	1st Video Amp. Screen
R41	4000Ω	½	23X071	BTS-3900	1st Video Amp. Plate
R42	1 Meg.	½	23Z006	BTS-1 Meg.	2nd Video Amp. Grid
R43	220Ω	½	23Z022	BTS-220	2nd Video Amp. Cathode
R44	3300Ω	2	23Z233	BTB-3300	2nd Video Amp. Plate
R45	1 Meg.	½	23Z006	BTS-1 Meg.	DC Restorer Load
R46	100KΩ	½	23Z005	BTS-100K	Picture Tube Grid
R47	330KΩ	½	23Z035	BTS-330K	Voltage Divider
R48	10KΩ	½	23Z004	BTS-10K	Voltage Divider
R49	150KΩ	½	23Z015	BTS-150K	Voltage Divider
R50	22KΩ	½	23Z024	BTS-22K	Voltage Divider
R51	1000Ω	½	23Z003	BTS-1000	Acc. Anode Load
R52	3300Ω	½	23Z033	BTS-3300	Centering Network
R53	68Ω	½	23Z061		1st Sound IF Amp. Cathode
R54	1000Ω	½	23Z003	BTS-1000	1st Sound IF Decoupling
R55	100KΩ 20%	½	23Z005		2nd Sound IF Amp. Grid
R56	68Ω	½	23Z061		2nd Sound IF Amp. Cathode
R57	1000Ω	½	23Z003	BTS-1000	2nd Sound IF Amp. Decoupling
R58	220Ω	½	23Z022	BTS-220	Decoupling
R59	150KΩ	½	23Z015		Limiter Grid
R60	10KΩ	2			Voltage Divider - See Note 4
R61	10KΩ	2			Limiter Decoupling - See Note 4
R62	100KΩ 20%	½	23Z005	BTS-100K	Disc. Diode Load
R63	100KΩ 20%	½	23Z005	BTS-100K	Disc. Diode Load
R64	47KΩ	½	23Z044	BTS-47K	Deeemphasis
R65	1 Meg. 20%	½	23Z006	BTS-1 Meg.	AF Amp. Grid
R66	10KΩ	½	23Z004	BTS-10K	AF Amp. Grid
R67	10KΩ	½	23Z004	BTS-10K	AF Amp. Cathode
R68	220KΩ	½	23Z025	BTS-220K	AF Amp. Plate
R69	10KΩ	2	23Z104	BTB-10K	AF Amp. Plate Decoupling
R70	47KΩ 20%	½	23Z044	BTS-47K	Tone Compensation
R71	15KΩ	½	23Z014	BTS-15K	Tone Compensation
R72	470KΩ	½	23Z045	BTS-470K	AF Amp. Grid
R73	4700Ω	½	23Z043	BTS-4700	AF Amp. Grid
R74	470Ω	½	23Z042	BTS-470	AF Amp. Cathode
R75	33KΩ	½	23Z034	BTS-33K	AGC Keying Grid
R76	22KΩ	1	23Z124	BTA-22K	Voltage Divider
R77	15KΩ	½	23Z014	BTS-15K	AGC Keying Screen
R78	68KΩ	½	23Z064	BTS-68K	AGC Network - See Note 5
R79	10KΩ	½	23Z004	BTS-10K	AGC Network
R80	4700Ω	½	23Z043	BTS-4700	AGC Network
R81	15KΩ 5%	½	23Z014	BTS-15K-5%	Isolation
R82	10 Meg. 20%	½	23Z007	BTS-10 Meg.	Sync. Clipper Grid
R83	33KΩ 20%	½	23Z034	BTS-33K	Sync. Clipper Plate
R84	10KΩ	1	23Z104	BTA-10K	Sync. Clipper Plate - See Note 6
R85	2200Ω	½	23Z023	BTS-2200	Voltage Divider - See Note 7
R86	2200Ω	½	23Z023	BTS-2200	Filter - See Note 4
R87	1 Meg.	½	23Z006	BTS-1 Meg.	Sync. Amp. Grid
R88	6800Ω	½	23Z063	BTS-6800	Sync. Amp. Plate
R89	4700Ω	1	23Z143	BTA-4700	Filter
R90	100KΩ	½	23Z005	BTS-100K	Integrator
R91	220KΩ	½	23Z025	BTS-220K	Vert. Phase Inv. Grid
R92	3300Ω 5%	½	23Z033	BTS-3300-5%	Vert. Phase Inv. Cathode
R93	3300Ω 5%	½	23Z033	BTS-3300-5%	Vert. Phase Inv. Plate
R94	470KΩ	½	23Z045	BTS-470K	Integrator
R95	470KΩ	½	23Z045	BTS-470K	Integrator
R96	22KΩ	½	23Z024	BTS-22K	Differentiator
R97	22KΩ	½	23Z024	BTS-22K	Differentiator
R98	1.5 Meg.	½	23Z016	BTS-1.5 Meg.	Differentiator
R99	1.5 Meg. 20%	½	23Z016	BTS-1.5 Meg.	Differentiator
R100	10 Meg. 20%	½	23Z007	BTS-10 Meg.	Integrator
R101	10KΩ	½	23Z004	BTS-10K	Phase Det. Load
R102	250KΩ	1		BTA-220K	Phase Det. Load - See Note 8
R103	10KΩ	½	23Z004	BTS-10K	Vert AFC Cath.
R104	1 Meg.	½	23Z006	BTS-1 Meg.	Vert AFC Plate
R105	470KΩ	½	23Z045	BTS-470K	Vert AFC Plate Decoupling
R106	2.2 Meg.	½	23Z026	BTS-2.2 Meg.	Voltage Divider - See Note 4
R107	1.5 Meg. 20%	½	23Z016	BTS-1.5 Meg.	Voltage Divider
R108	10 Meg. 20%	½	23Z007	BTS-10 Meg.	Vert. AFC Grid
R109	1 Meg.	½	23Z006	BTS-1 Meg.	Vert. Oscillator Plate
R110	3300Ω	½	23Z033	BTS-3300	Vert. Peaking - See Note 9
R111	2.2 Meg.	½	23Z026	BTS-2.2 Meg.	Vert. Output Grid
R112	680Ω 5%	1	23Z182	BTA-680-5%	Vert. Output Cathode
R113	68Ω	½	23Z061		Parasitic Suppressor
R114	68Ω	½	23Z061		Parasitic Suppressor
R115	68KΩ	½	23Z064	BTS-68K	Feedback Network - See Note 2
R116	150KΩ	1	23Z015	BTA-150K	Damping
R117	470KΩ	½	23Z045	BTS-470K	Horiz. Phase Det. Load
R118	470KΩ	½	23Z045	BTS-470K	Horiz. Phase Det. Load
R119	470KΩ	½	23Z045	BTS-470K	Horiz. AFC Filter Network
R120	470Ω	½	23Z042		Parasitic Suppressor
R121	10Ω	½	23Z001	BW-½-10	Horiz. AFC Cathode
R122	470Ω	½	23Z042	BTS-470	Horiz. AFC Cathode
R123	15KΩ	½	23Z014	BTS-15K	Horiz. AFC Screen
R124	27KΩ 20%	½	23Z072	BTS-27K	Voltage Divider
R125	4.7 Meg.	½	23Z046	BTS-4.7 Meg.	Voltage Divider - See Note 4

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	Radio Craftsmen PART No.	IRC PART No.	
R126	22KΩ	2	23Z234	BTB-22K	Horiz. AFC Plate
R127	22KΩ	1	23Z234	BTA-22K	Horiz. Osc. Grid
R128	5000Ω	10	23X608	1-3/4A-5000	Horiz. Osc. Plate - Wirewound
R129	6800Ω 20%	½	23Z063	BTS-6800	Differentiator
R130	220KΩ	½	23Z025	BTS-220K	Horiz. Discharge Grid
R131	220KΩ	2	23Z225	BTB-220K	Horiz. Discharge Plate
R132	10KΩ 20%	½	23Z004	BTS-10K	Horiz. Discharge Plate Decoupling
R133	1500Ω 20%	½		BTS-1500	Horiz. Peaking - See Note 7
R134	470KΩ	½	23Z045	BTS-470K	Horiz. Output Grid
R135	330Ω	½	23Z032		Parasitic Suppressor
R136	15KΩ	5		1-3/4A-15K	Horiz. Output Screen- Wirewound - See Note 10
R137	10KΩ	10	23X609	1-3/4A-10K	Filter - Wirewound
R138	10KΩ	1	23Z104	BTA-10K	Horiz. Size Coil Shunt - See Note 11
R139	470KΩ	½	23Z045		H. V. Filter
R140	22Ω	4	23Z421		Surge Limiter - Wirewound
R141	22Ω	4	23Z421		Surge Limiter - Wirewound
R142	1 Meg.	½	23Z006	BTS-1 Meg.	Horiz. Discharge Plate - See Note 4

Note 2. - Some Models use a 47KΩ resistor in this application.
Note 3. - Some Models use a 220Ω Resistor in this application.
Note 4. - Not Used in all Models.
Note 5. - Some Models use a 47KΩ and a33KΩ resistor in series to obtain required resistance and wattage.
Note 6. - Some Models use a 15KΩ 1 Watt resistor in this application.
Note 7. - Some Models use a3300Ω resistor in this application.
Note 8. - Some Models use a 220KΩ 1 Watt resistor in this application.
Note 9. - Some Models use a 4700Ω resistor in this application.
Note 10. - Some Models use a 22KΩ 5 Watt resistor in this application.
Note 11. - Some Models use a 22KΩ 1 Watt resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	RADIO CRAFTSMEN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 1.7 A	300VCT .170ADC	6.3VAC @ 1.8A	6.3VAC @ 9.3A	19S209			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	DC RESISTANCE		Radio Craftsmen PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.					
T2	240Ω	1350Ω	19S601	A-8111 ①	A-3000 ①	TBO-1	Vert. Block. Osc. Trans
T3	485Ω Tap @	11Ω Tap @ .5Ω	19X010				Hor. Output Trans.
T	80Ω	7.5Ω					
T4	1100Ω	13Ω	19S009	A-8113	A-3036	TSO-5 ①	Vert. Output Trans.
T5A	9Ω		5X807	DY-7	MD-70F		Horiz. Deflection Coil
B	53Ω						Vert. Deflection Coil

① Drill One New Mtg. Hole

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	Radio Craftsmen PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.170ADC	95Ω	5 Henries	19S403	C-2325	C-2991	R-7150 ①	① Drill New Mtg. Holes
L2	.014ADC	215Ω	.4 Henries	19S404				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	RADIO CRAFTSMEN PART No.	MEISSNER PART No.	
L3	Ant. Coil	0Ω	0Ω			Part of Tuner Part #25A040
L4	RF, Mixer Grid & Osc. Coils	0Ω				Part of Tuner Part #25A040
L5	Fil. Choke	0Ω		5X406		
L6	Fil. Choke	0Ω		5X406		
L7	Conv. Trans.	1.8Ω	0Ω	5X009		
L8	1st Video IF	.3Ω		5X008		
L9	2nd Video IF	.1Ω		5A010		With Trap
L10	Fil. Choke	0Ω		5X406		
L11	3rd Video IF	.1Ω		5A011		With Trap
L12	Fil. Choke	0Ω		5X406		
L13	4th Video IF	.1Ω		5A012		
L14	Fil. Choke	0Ω		5X406		
L15	5th Video IF	.1Ω		5A012		
L16	Fil. Choke	0Ω		5X406		
L17	Sound Trap	1.5Ω		5A407		
L18	Peaking	4.3Ω		5X404	19-1921 •	120 Microhenries, Wound on 22KΩ resistor, Blue dot
L19	Peaking	6.5Ω		5X405	19-1922	250 Microhenries, Green dot
L20	Peaking	4.3Ω		5X404	19-1921 •	120 Microhenries, Wound on 22KΩ resistor, Blue dot
L21	Peaking	3.7Ω		5X403	19-1920	93 Microhenries, Red dot
L22	Peaking	4.3Ω		5X404	19-1921 •	120 Microhenries, Wound on 22KΩ resistor, Blue dot
L23	Peaking	3.7Ω		5X403	19-1920	93 Microhenries, Red dot
L24	1st Sound IF	.2Ω	.2Ω	5X006		
L25	Fil. Choke	0Ω		5X406		
L26	2nd Sound IF	.2Ω	.2Ω	5X006		
L27	Fil. Choke	0Ω		5X406		
L28	Disc. Trans.	.2Ω	.3Ω	5X007		
L29	Fil. Choke	0Ω		5X406		
L30	Horiz. Sync. Disc. Trans.	50Ω	50Ω	5X805		
L31	Horiz. Lin.	32Ω		5A809		
L32	Horiz. Size	.2Ω	35Ω	5A810		

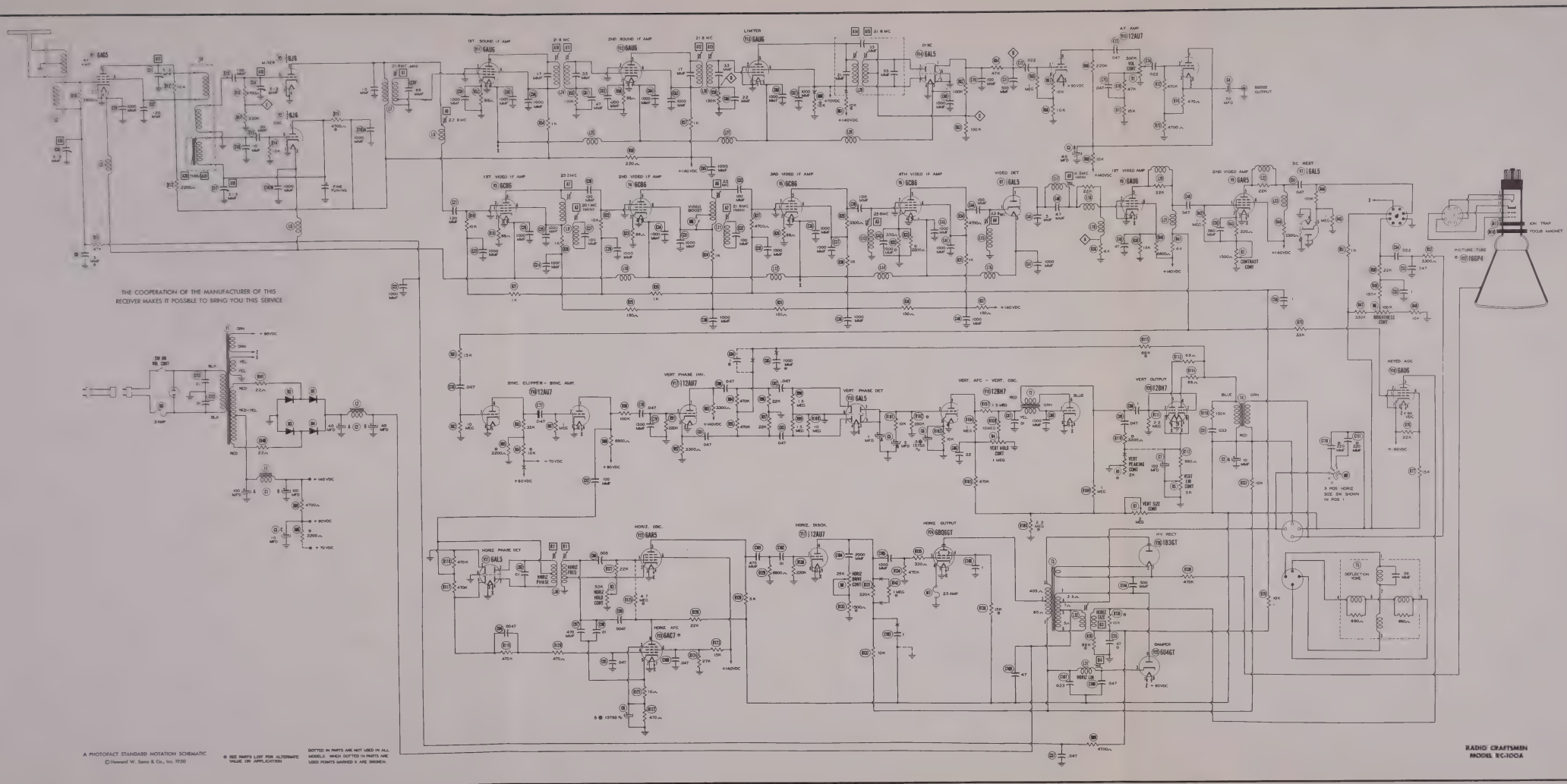
• Parallel with 22KΩ resistor.

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	Radio Craftsmen PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.170ADC	31X003	NF-5		
M2	.170ADC	31X003	NF-5		
M3	.170ADC	31X003	NF-5		
M4	.170ADC	31X003	NF-5		

MISCELLANEOUS

ITEM No.	PART NAME	RADIO CRAFTSMEN PART No.	NOTES
M5	RF Tuner	25A040	
M6	Fuse	34X003	3A 250V Type AGC
M7	Fuse	34X001	.25A 250V Type AGC
M8	Switch		Video Booster
M9	Switch		Horiz. Size - Not used in all Models
M10	Focus Magnet		
M11	Ion Trap		


THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
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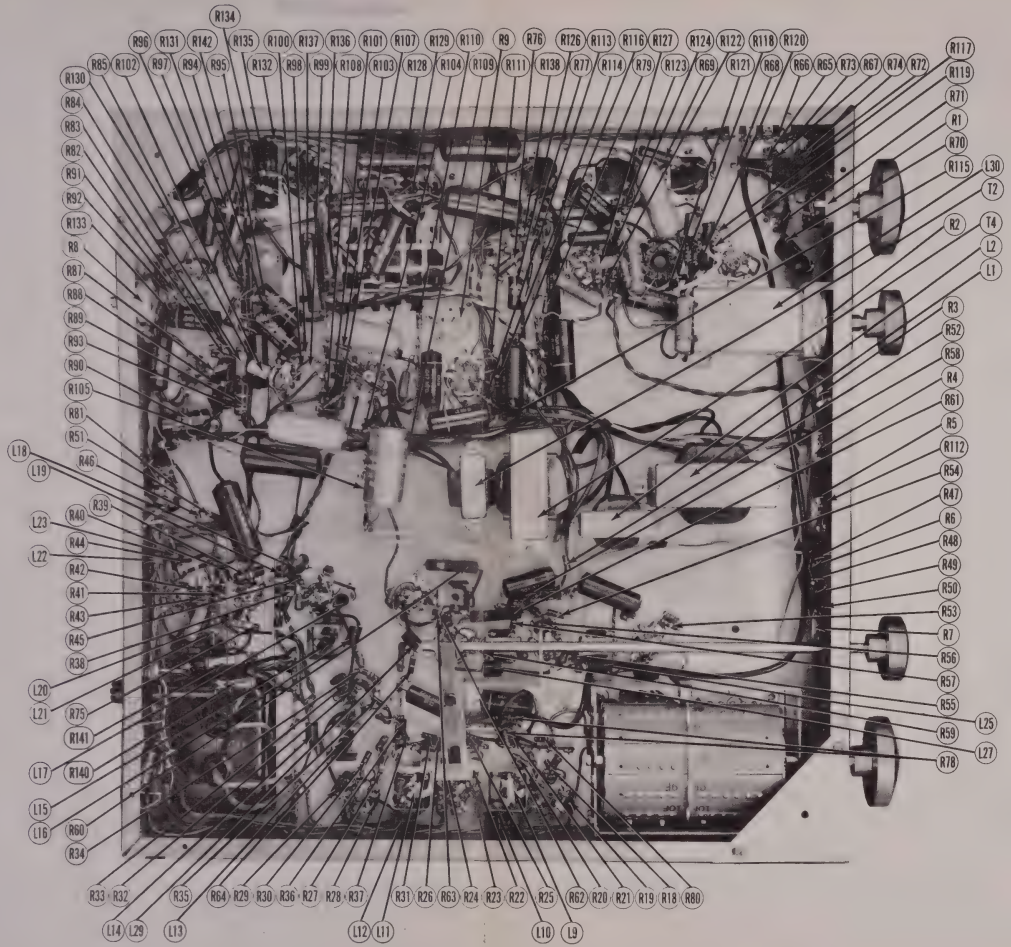

CHASSIS BOTTOM VIEW- RESISTOR AND INDUCTOR IDENTIFICATION

PHOTOFACT* Folder

SENTINEL MODELS
1U416, 416

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MODEL 416

SENTINEL MODELS
1U416, 416

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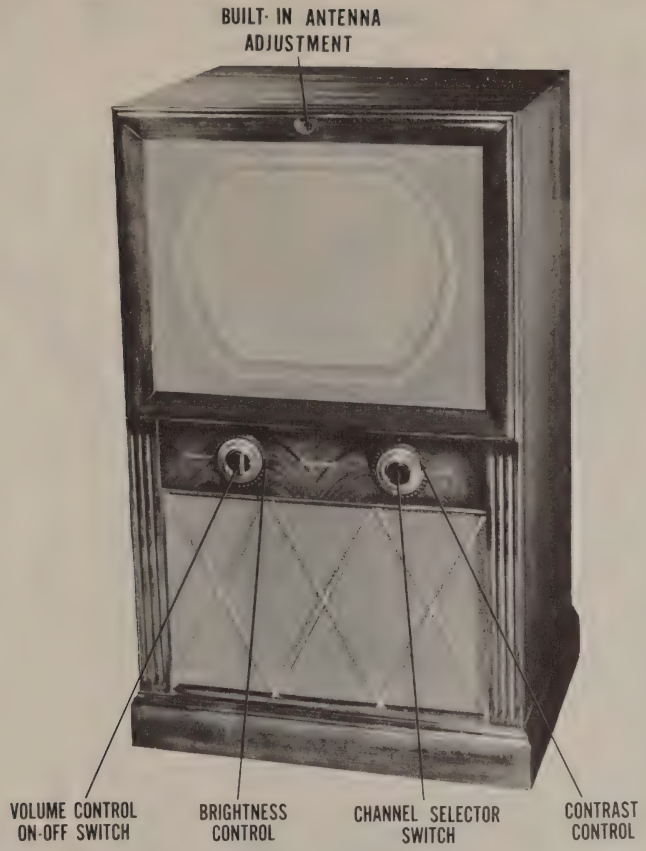

SENTINEL MODEL 416

TRADE NAME	Sentinel, Models 1U416, 416
MANUFACTURER	Sentinel Radio Corp., 2100 W. Dempster, Evanston, Illinois
TYPE SET	Television Receiver
TUBES	Twenty One
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	2.1 Amp. at 117 Volts AC
TUNING RANGE	Channels 2 thru 13

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THIS SERVICE INFORMATION SUPERCEDES PRELIMINARY DATA PREVIOUSLY ISSUED ON THESE MODELS.

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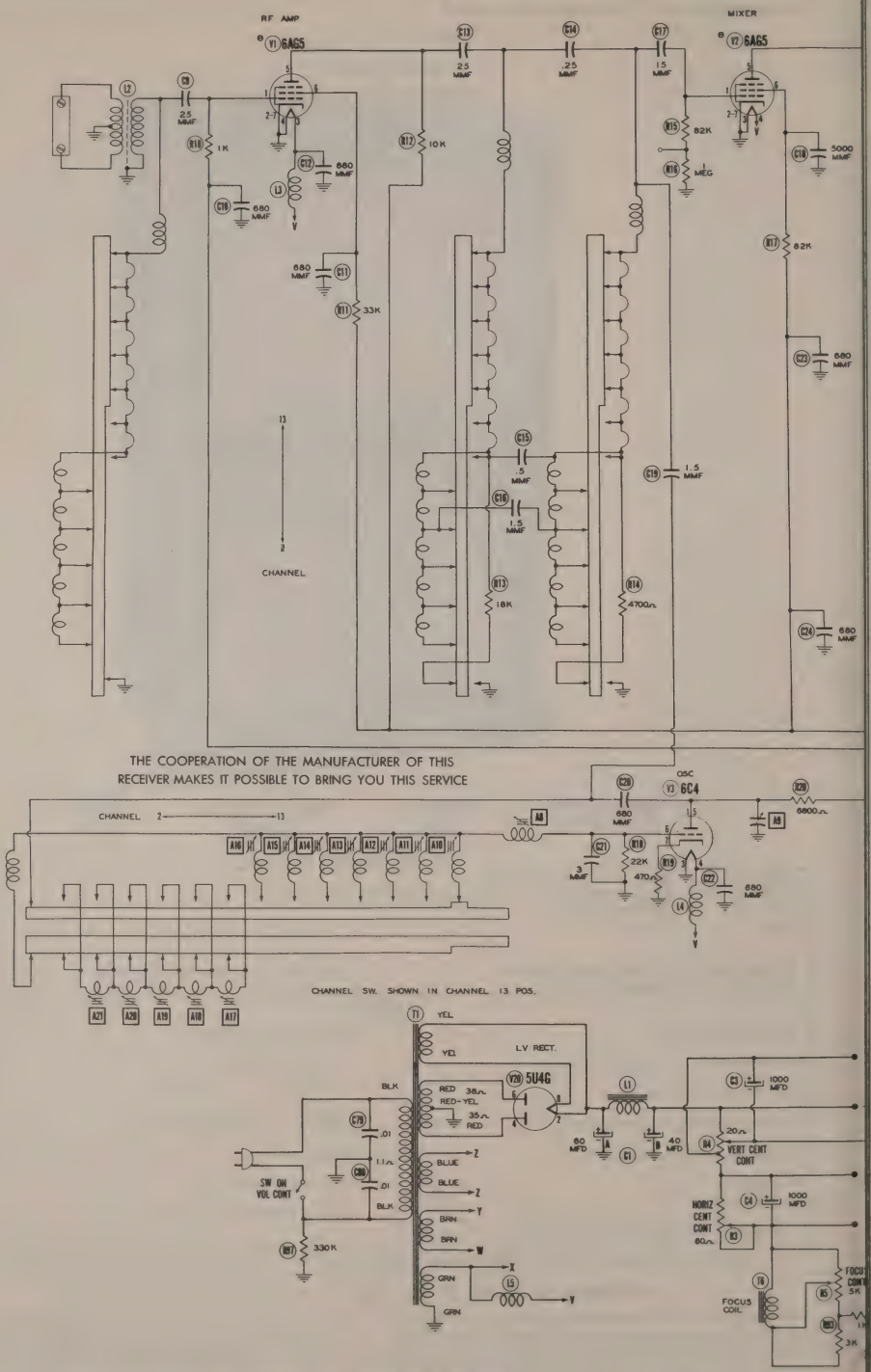
SENTINEL
MODELS 1U416, 416



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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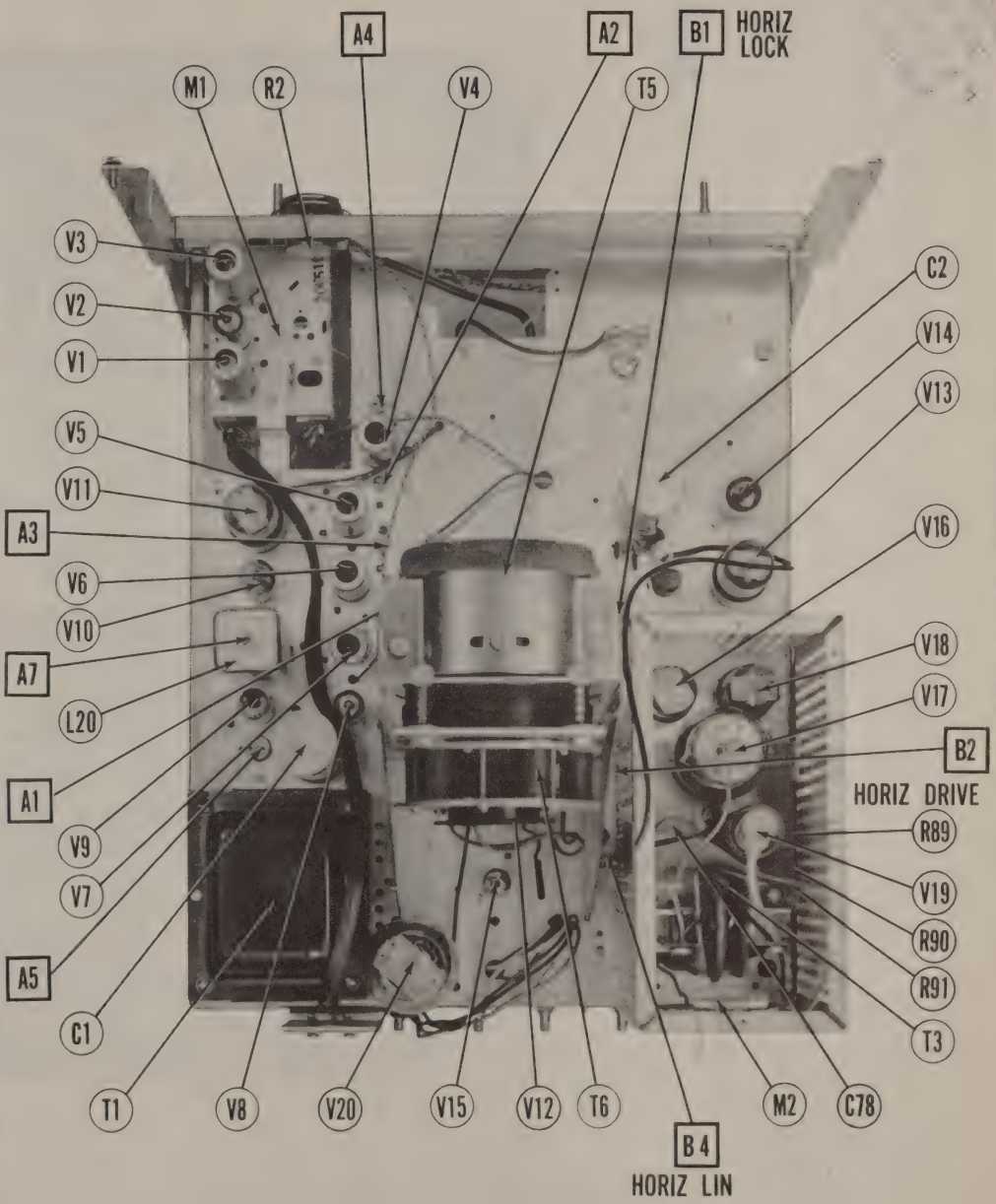
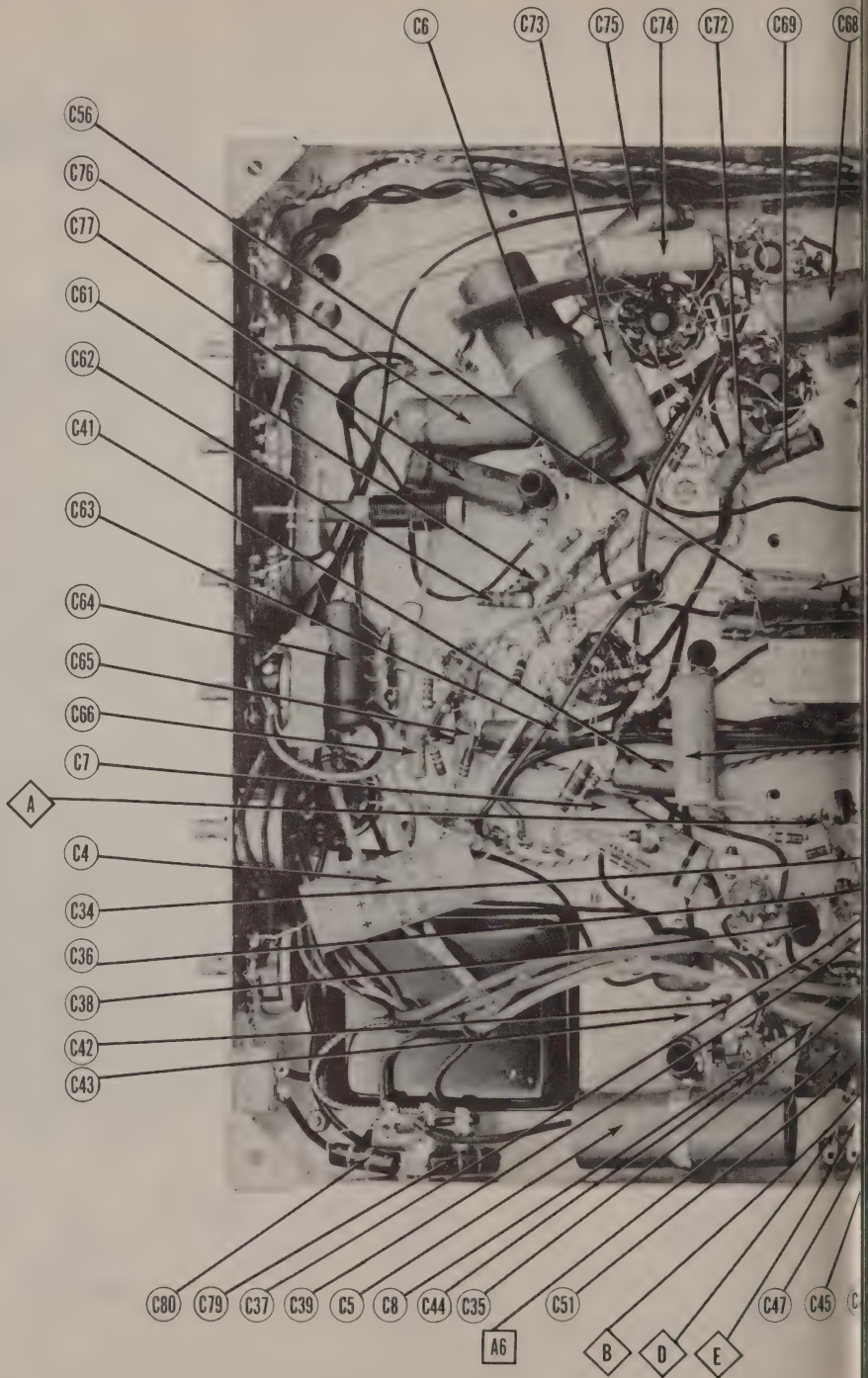
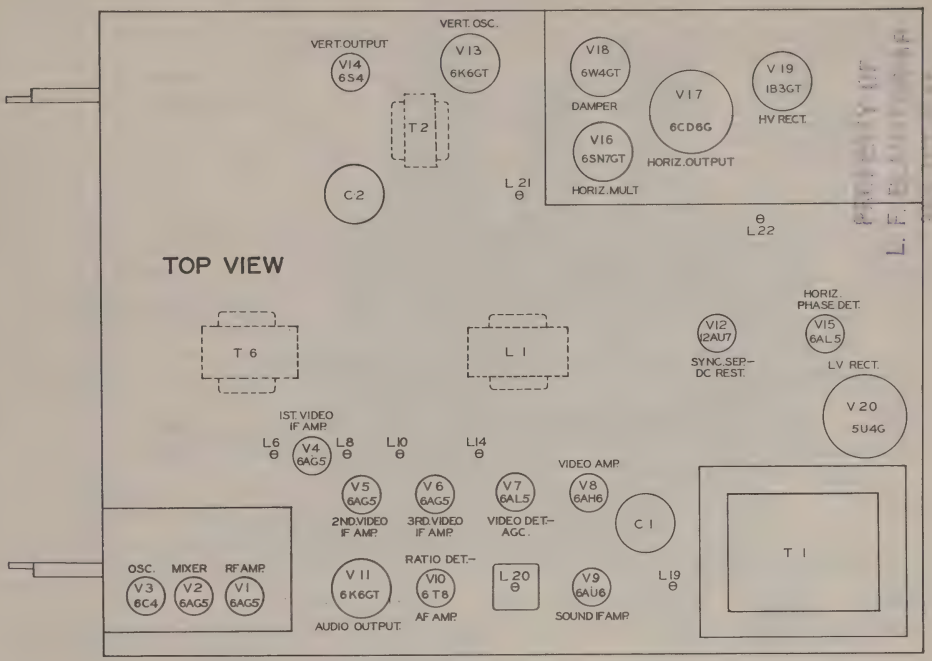
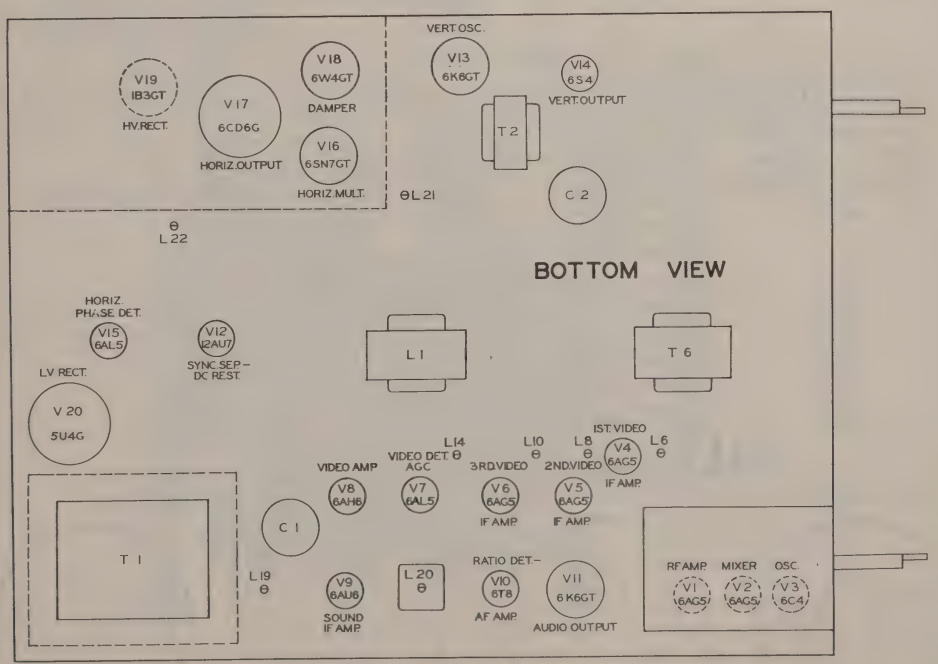


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If the set is to be aligned with the picture tube removed, remove the horizontal oscillator tube (V16) from its socket to eliminate the high voltage shock hazard.

VIDEO IF ALIGNMENT

Remove the local oscillator tube (V3) from its socket to eliminate the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the junction of R26 and C31, connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	25.75MC (Unmod.)	Any	DC Probe to Point (A). Common to chassis.	A1	Adjust for maximum deflection.
2.	Direct	"	24.9MC	"	"	A2	"
3.	Direct	"	23.4MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	25MC (10MC SWP)	21MC 25.5MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. If necessary, retouch A1, A2, A3, and A4 for optimum response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

During sound IF alignment the common lead of the VTVM is connected to approximately 125 volts with respect to chassis. Avoid touching or grounding the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to alignment Point A . Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (B). Common to Point (C).	A5, A6	Adjust for maximum deflection.
6.	.01MFD	"	"	"	DC Probe to Point (D). Common to Point (E).	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD	High side to alignment Point A . Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A5, A6	Disconnect stabilizer capacitor C8. Adjust for maximum amplitude and symmetry as per figure 2.
6.	.01MFD	"	"	"	"	Vert. Amp. to Point (D). Low side to chassis.	A7	Reconnect capacitor C8. Adjust A7 so 4.5MC occurs at center of crossover lines as per figure 3. Slightly retouch A6 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Replace the local oscillator tube (V3) in its socket.
The high band oscillator padder (A8) should be adjusted only if one or more of the high band oscillator adjustments shows insufficient range. If A8 is adjusted, recheck all high band oscillator adjustments. The oscillator padder adjustment (A9) is an overall oscillator circuit adjustment and should not be adjusted unless one of the low band individual channel oscillator adjustment screws shows insufficient range. If A9 is changed it will be necessary to readjust all of the individual channel oscillator adjustments.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A10	Adjust to place sound marker at 5% as shown in figure 4. The video marker should be at 50%.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A11	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A12	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A13	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A14	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A15	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A16	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A17	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A18	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A19	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A20	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A21	

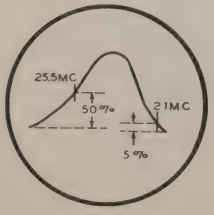


FIG. 1

FIG. 2

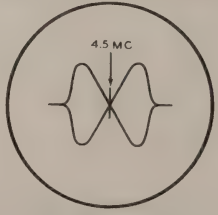
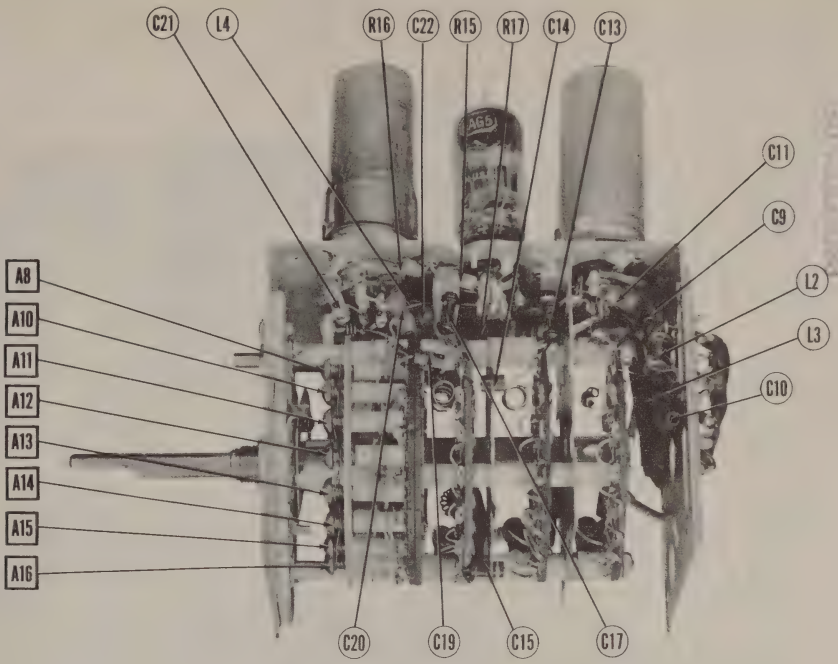
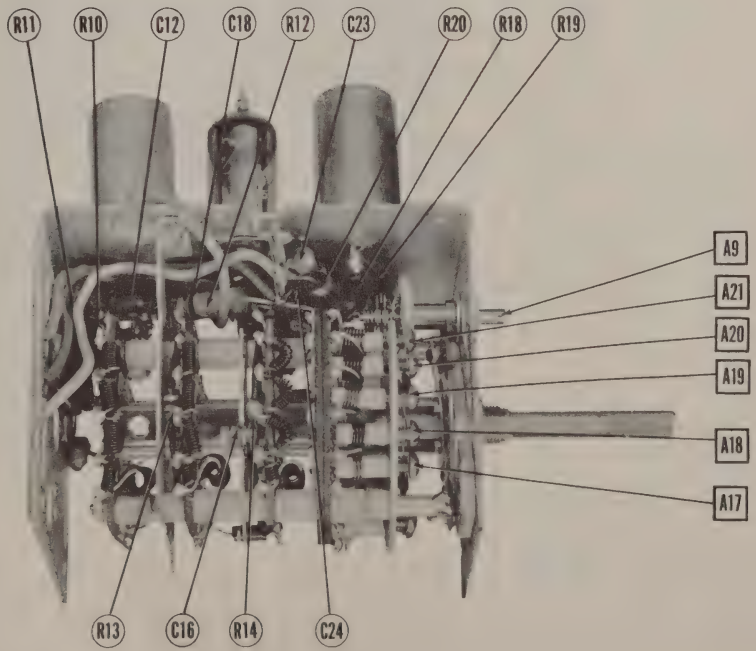


FIG. 3

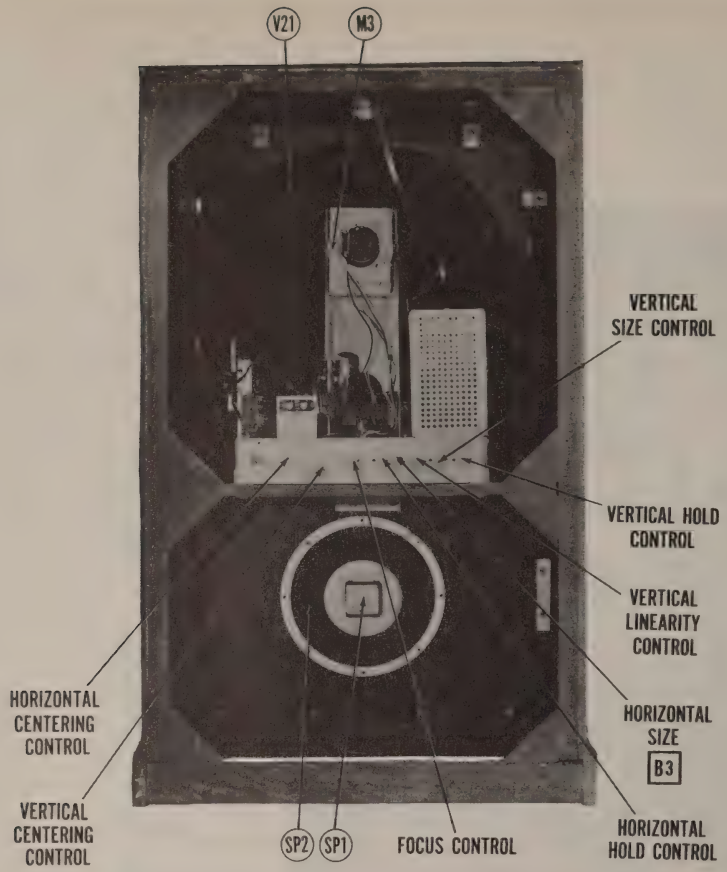
FIG. 4



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal lock slug (B1) to the center of the range over which the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) clockwise as far as possible without crowding the right half of the picture.

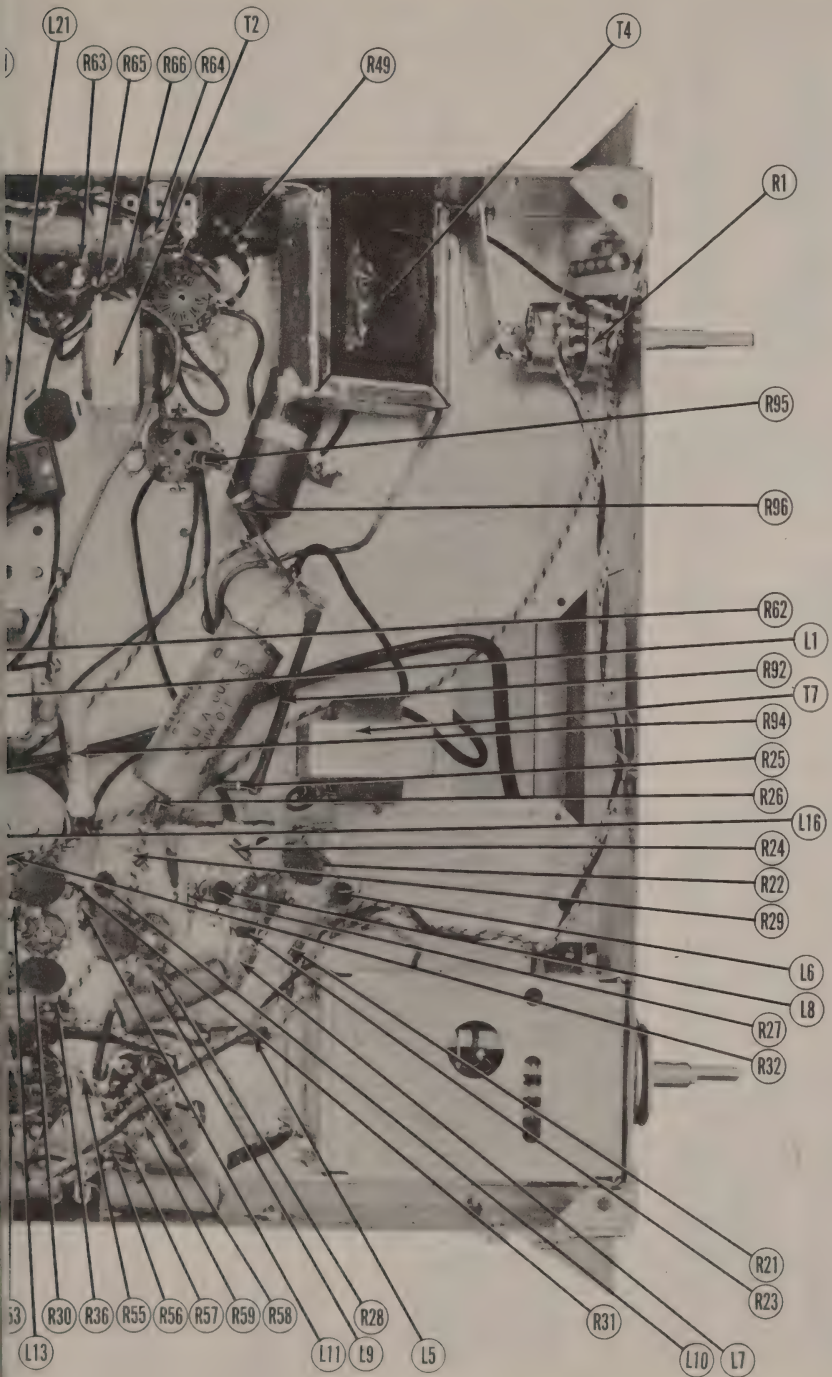
Adjust the horizontal size slug (B3) until the picture fills the mask horizontally.

Adjust the horizontal linearity slug (B4) until the picture is symmetrical from left to right. Slight readjustment of B2 may be necessary for optimum results.

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove six wood screws holding rear cover in place.
3. Disconnect built-in antenna.
4. Disconnect speaker leads at chassis.
5. Remove six phillips head bolts holding chassis to cabinet. Remove chassis.
6. Remove four 1/4" hex nuts holding speaker. Remove speaker.

FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.



AND INDUCTOR IDENTIFICATION

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amp.	6AG5	6AG5	7BD	
B	RF Amp.	6CB6	6CB6	6CK	
V2A	Mixer	6AG5	6AG5	7BD	
B	Mixer	6CB6	6CB6	6CK	
V3	Oscillator	6C4	6C4	6BG	
V4	1st Video IF	6AG5	6AG5	7BD	
V5	2nd Video IF	6AG5	6AG5	7BD	
V6	3rd Video IF	6AG5	6AG5	7BD	
V7	Video Det. -AGC	6AL5	6AL5	6BT	
V8	Video Amp.	6AH6	6AH6	7BK	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V13	Ratio Det. -AF Amp.	6T8	6T8	9E	
V11	Audio Output	6K6GT	6K6GT	7S	
V12	Sync. Sep. -DC Rest.	12AU7	12AU7	9A	
V13	Vert. Osc.	6K6GT	6K6GT	7S	
V14	Vert. Output	6S4	6S4	9AC	
V15	Hor. Phase Det.	6AL5	6AL5	6BT	
V16	Hor. Mult.	6SN7GT	6SN7GT	8BD	
V17	Hor. Output	6CD6G	6CD6G	5BT	
V18	Damper	6W4GT	6W4GT	4CG	
V19	HV Rect.	1B3GT	1B3GT	3C	
V20	LV Rect.	5U4G	5U4G	5T	
V21	Picture Tube	16GP4	16GP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SENTINEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	475	25E42	AFH128J		UPT6450		TVL-2830	▲ Filter
B	40	475						TVA-1804	▲ Filter
C2A	40	450	25E44	AFH8J8D26B		UPT300		TVL-3706	▲ Filter
B	50	150							■ Decoupling
C	100	50							▲ Vert. Output Cath.
C3	1000	3	25E50	PRS6/1000		BRH610		TVA-1104	Vert. Cent. Cont. Byp.
C4	1000	5	25E52	PRS6/1000		BRH610		TVA-1104	Hor. Cent. Cont. Byp.
C5	40	450	25E47	PRS450/40		BR4045A		TVA-1712	Filter
C6	40	450	25E47	PRS450/40		BR4045A		TVA-1712	Decoupling
C7	100	10	25E12	PRS12/100		BRH121A		TVA-1130	V. Amp. Cath. Byp.
C8	10	25	25E8	PRS25/10		BBR10-25		TVA-1204	Stabilising Cap.
C9	25			SI25	D6-250		GP1K-25	19C27	RF Coupling
C10	680			SI680	D6-681		GP2K-680	19C17	AGC Filter
C11	680			SI680	D6-681		GP2K-680	19C17	RF Amp. Screen
C12	680			SI680	D6-681		GP2K-680	19C17	RF Amp. Fil. Byp.
C13	25			SI25	D6-250		GP1K-25	19C27	RF Coupling
C14	.25								RF Coupling
C15	.5								RF Coupling
C16	1.5			SI1.5NPO	TCZ-1.5		NP0K-1.5		RF Coupling
C17	15			SI15	D6-15		GP1K-15	19C22	RF Coupling
C18	5000			BPD-005	DD-502		811-005	29C1	Mixer Screen Bypass
C19	1.5			SI1.5NPO	TCZ-1.5		NP0K-1.5		Osc. Coupling
C20	680			SI680	D6-681		GP2K-680	19C17	Osc. Feedback
C21	3						N150K-3		Osc. Grid Cap.
C22	680			SI680	D6-681		GP2K-680	19C17	Osc. Fil. Bypass
C23	680			SI680	D6-681		GP2K-680	19C17	RF Bypass
C24	680			SI680	D6-681		GP2K-680	19C17	RF Bypass
C25	100		23E2027-2	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C26A	4000		23E2037			1D5D4			Mixer Plate Dec.
B	4000			BPD-2 x 004	DD-2-502	1D5D4	882-2 x 004	36C2	1st V. IF Dec.
C27	5000		23E2025	BPD-005	DD-502	1D5D5	811-005	29C1	1st V. IF Fil.
C28	5000		23E2025	BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C29	100		23E2027-2	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C30	5000		23E2025	BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C31	1.0	200	23E226	484-1.0					AGC Filter
C32A	4000		23E2037			1D5D4			2nd V. IF Dec.
B	4000			BPD-2 x 004	DD-2-502	1D5D4	882-2 x 004	36C2	2nd V. IF Fil.
C33	100		23E2027-2	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C34A	4000		23E2037			1D5D4			3rd V. IF Plate Dec.
B	4000			BPD-2 x 004	DD-2-502	1D5D4	882-2 x 004	36C2	3rd V. IF Screen
C35A	4000		23E2037			1D5D4			3rd V. IF Cath.
B	4000			BPD-2 x 004	DD-2-502	1D5D4	882-2 x 004	36C2	3rd V. IF Fil.
C36	100		23E2027-2	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C37	10		23E25	SI10	D6-100	5W5Q1	GP1K-10	19C19	IF Coupling
C38A	4000		23E2037			1D5D4			DAGC Decoupling
B	4000			BPD-2 x 004	DD-2-502	1D5D4	882-2 x 004	36C2	V. Det.-AGC Fil.
C39	5		23E28	SI5	TCZ-4.7	5W5V5	GP1K-5	MS-55	V. Diode Filter
C40	.1	400	23E418	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C41	.05	200	23E216	P288-05	DF-503	PTE4S5		2TM-S5	Pic. Tube Cath.
C42	2		23E21		TCZ-2.2				S. IF Coupling
C43	3		23E13				N750K-3		Fixed Trimmer
C44A	4000		23E2037			1D5D4			S. IF Decoupling
B	4000			BPD-2 x 004	DD-2-502	1D5D4	882-2 x 004	36C2	S. IF Cath.
C45	1000		23E2012	SI1000	D6-102	1W5D1	GP2L-001	19C1	Diode Load Cap.
C46	.002	400	23E205	P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	De-emphasis
C47	.05	400	23E216	P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C48	.005	200	23E208	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C49	1000		23E2012	SI1000	D6-102	1W5D1	GP2L-001	19C1	RF Bypass
C50	.02	400	23E413	P488-02	DF-203	PTE4S2		4TM-S5	Audio Coupling
C51	5000		23E2025	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C52	.05	400	23E216	P488-05	DF-503	PTE4S5		4TM-S5	RF Bypass
C53	.05	400	23E216	P488-05	DF-503	PTE4S5		4TM-S5	Bias Filter
C54	5000		23E2025	BPD-005	DD-502	1D5D5	811-005	29C1	Output Plate Byp.
C55	.002	400	23E205	P488-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Integrator Net.
C56	.005	600	23E208	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Integrator Net.
C57	.005	600	23E208	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Integrator Net.
C58	.005	600	23E208	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Vert. Osc. Grid
C59	.1	600	23E618	P688-1		PTE6P1		6TM-P1	Vert. Discharge
C60	.1	600	23E618	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling

CAPAC

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SENTINEL PART No.	AEROVOX PART No.	CEN PA
C61	1000		23E2012	SI1000	D6
C62	1000		23E2012	SI1000	D6
C63	.003	200	23E204	P688-003	D6
C64	.05	600	23E616	P688-05	DF
C65	.002	400	23E205	P688-002	D6
C66	.002	400	23E205	P688-002	D6
C67	.01	400		P488-01	D6
C68	.25	400	23E222	P488-25	
C69	250		23E2030-3	SI250	D6
C70	4000	500	23E85	1464-004	
C71	500		23E2030-9	1469-00035	D6
C72	.001	600	23E604	P688-001	D6
C73	.1	600	23E618	P688-1	DF
C74	.05	600	23E616	P688-05	DF
C75	.25	200	23E222	P488-25	
C76	.1	600	23E618	P688-1	
C77	.05	600	23E616	P688-05	
C78	500	20000	23E2029-2	HV20B	TV
C79	.01	400	23E2035-3	P488-01	D6
C80	.01	400	23E2035-3	P488-01	D6

* Items C65 and C66 are replace by one .005MFD ca
† Some models use .05MFD in this application.

C

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.	C R
R1A	35KΩ	1/2	28E64		R1
B	500KΩ	1/2			
R2A	1000Ω	1/2	28E65	Q11-108	AM
B	Shaft		Not Req.	Not Req.	RS
R3	60Ω	2	28E54	W-60	RT
R4	20Ω	2	28E68	W-20 x 10	43
R5	5000Ω	2	28E57	W-5000	43
R6A	50KΩ	1/2	28E43	Q11-123	AC
B	Shaft		Not Req.	Not Req.	FX
R7A	2000Ω	1/2	28E67	Q11-110	AC
B	Shaft		Not Req.	Not Req.	FX
R8A	1 Meg.	1/2	28E36	Q11-137	AC
B	Shaft		Not Req.	Not Req.	RS
R9A	1 Meg.	1/2	28E36	Q11-137	AC
B	Shaft		Not Req.	Not Req.	RS

R

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.
R10	1000Ω	1/2		BTS-1000
R11	33KΩ	1/2		BTS-33K
R12	10KΩ	1		BTA-10K
R13	18KΩ	1/2		BTS-18K
R14	4700Ω 10%	1/2		BTS-4700
R15	82KΩ	1/2		BTS-82K
R16	1 Meg. 10%	1/2		BTS-1 Meg
R17	82KΩ 10%	1/2		BTS-82K
R18	22KΩ	1/2		BTS-22K
R19	470Ω	1/2		BTS-470
R20	6800Ω	1		BTA-6800
R21	1000Ω	1/2	27E102-2	BTS-1000
R22	6800Ω 5%	1/2	27E1009-13	BTS-6800-
R23	10Ω 10%	1/2	27E100-2	
R24	1000Ω 10%	1/2	27E102-2	BTS-1000
R25	330Ω 10%	1/2	27E331-2	BTS-330
R26	330Ω 10%	1/2	27E331-2	BTS-330
R27	6800Ω 5%	1/2	27E1009-13	BTS-6800-
R28	100Ω 10%	1/2	27E101-2	BTS-100
R29	1000Ω 10%	1/2	27E102-2	BTS-1000
R30	100Ω 10%	1/2	27E101-2	BTS-100
R31	1000Ω 10%	1/2	27E102-2	BTS-1000
R32	1000Ω 10%	1/2	27E102-2	BTS-1000
R33	2.2Ω 10%	1/2	27E1015-2	BW-½-2.2
R34	330KΩ 10%	1/2	27E334-2	BTS-330K
R35	220KΩ	1/2	27E224-2	BTS-220K
R36	1000Ω 10%	1/2	27E102-2	BTS-1000
R37	39KΩ 10%	1	27E393-3	BTA-39K
R38	8200Ω 5%	1/2	27E1009-15	BTS-8200-
R39	100Ω 10%	1/2	27E101-2	
R40	330Ω 10%	1/2	27E331-2	BTS-330
R41	6800Ω 5%	1	27E1009-14	BTA-6800-
R42	47KΩ 10%	1/2	27E473-2	BTS-47K
R43	2200Ω 10%	1/2	27E222-2	BTS-2200
R44	270KΩ	1/2	27E274-2	BTS-270K
R45	820KΩ 10%	1/2	27E1009-21	BTS-820K
R46	4700Ω 10%	1/2	27E472-2	BTS-4700
R47	3300Ω 10%	1/2	27E332-2	BTS-3300
R48	220KΩ	1/2	27E224-2	BTS-220K
R49	68KΩ	1	27E683-3	BTA-68K
R50	270Ω 10%	1/2	27E271-2	BTS-270
R51	33KΩ 10%	1	27E333-2	BTA-33K
R52	6800Ω 10%	1/2	27E682-2	BTS-6800
R53	6800Ω 10%	1/2	27E682-2	BTS-6800
R54	39KΩ 10%	1/2	27E393-2	BTS-39K
R55	10 Meg.	1/2	27E106-2	BTS-10 Me
R56	220KΩ	1/2	27E224-2	BTS-220K
R57	220KΩ	1/2	27E224-2	BTS-220K
R58	150KΩ 5%	1/2	27E1009-12	BTS-150K-
R59	330KΩ 5%	1/2	27E1009-9	BTS-330K-
R60	22KΩ 10%	1/2	27E223-2	BTS-22K

DESCRIPTIONS

(CONT.)

DATA	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
CORNELL-DUBILIER PART No.			
W5D1	GP2L-001	19C1	Hor. Sync. Coupling
W5D1	GP2L-001	19C1	Hor. Sync. Coupling
TE6D3	GP2M-003	6TM-D3	Voltage Divider
TE685		6TM-S5	Hor. Feedback
TE6D2	GP2M-002	6TM-D2	AFC Filter *
TE6D2	GP2M-002	6TM-D2	AFC Filter *
TE4S1	811-01	4TM-S1	AFC Filter †
T4P25		4TM-P25	AFC Filter
W5T25	GP2K-250	1FM-325	Hor. MV Feedback
DR5D4		MS-24	Fixed Trimmer
R5T5	GP2K-500	MS-35	Hor. Discharge
TE6D1	GP2L-001	6TM-D1	Hor. Sweep Coupling
TE6P1		6TM-P1	Hor. MV Decoup.
TE685		6TM-S5	Hor. Output Screen
T2P25		2TM-P25	Hor. Output Cath.
TE6P1		6TM-P1	Damper Filter
TE685		6TM-S5	Damper Filter
			HV Filter
TE4S1	811-01	4TM-S1	Line Filter
TE4S1	811-01	4TM-S1	Line Filter

some models.

OLS

CENTRALAB PART No.	INSTALLATION NOTES
	Brightness control-front
	Volume control and switch-rear
B-5	Contrast control
Not Req.	Attach to R2A per instructions
VK-117	Horiz. centering control-Wire Wound
SVT-901	Vert. centering control-tapped at 10Ω Wire Wound
VK-135	Focus control-Wire Wound
AN-31	Horiz. hold control
AK-1	Attach to R6A per instructions
AN-6	Vert. linearity control
AK-1	Attach to R7A per instructions
AN-69	Vert. size control
AK-1	Attach to R8A per instructions
AN-69	Vert. hold control
AK-1	Attach to R9A per instructions

ORS

IDENTIFICATION CODES

. RESISTORS ARE ± 20% UNLESS OTHERWISE STATED

Amp. Grid
Amp. Screen
Amp. Plate
Amp. Plate Coil Shunt
ter Grid Coil Shunt
ter Grid
ter Grid
ker Screen
c. Grid
c. Cathode
c. Plate
coupling
Video IF Amp. Grid
Video IF Amp. Cathode
Video IF Amp. Decoupling
C Network
C Network
Video IF Amp. Grid
Video IF Amp. Cathode
Video IF Amp. Decoupling
Video IF Amp. Cathode
Video IF Amp. Screen Decoupling
Video IF Amp. Plate Decoupling
eo Det. Diode Filament-Wire Wound
C Rectifier Diode Load
C Network
C Network
C Delay Network
eo Det. Diode Load
anitic Supp.
eo Amp. Cathode
eo Amp. Plate
eo Amp. Plate
ure Tube Grid
Restorer Load
c. Sep. Plate
c. Phase Inv. Plate
c. Phase Inv. Plate
ure Tube Cathode
age Divider
nd IF Amp. Cathode
nd IF Amp. Decoupling
lo Det. Diode Load
lo Det. Diode Load
-emphasis
Amp. Grid
Amp. Plate
put Grid
tage Divider
tage Divider
erator

RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SENTINEL PART No.	IRC PART No.	
R61	8200Ω 10%	½	27E822-2	BTS-8250	Integrator
R62	8200Ω 10%	½	27E822-2	BTS-8200	Integrator
R63	1.5 Meg.	½	27E155-2	BTS-1.5 Meg.	Vert. Osc. Grid
R64	2700Ω 10%	½	27E272-2	BTS-2700	Vert. Peaking
R65	470KΩ	½	27E474-2	BTS-470K	Vert. Osc. Plate
R66	1 Meg.	½	27E105-2	BTS-1 Meg.	Vert. Output Grid
R67	700Ω 10%	½	27E102-2	BTS-680	Vert. Output Cathode-See Note 1
R68	33KΩ 10%	½	27E333-2	BTS-33K	Horiz. Phase Det. Load-See Note 2
R69	33KΩ 10%	½	27E333-2	BTS-33K	Horiz. Phase Det. Load-See Note 2
R70	470KΩ 5%	½		BTS-470K-5%	Horiz. AFC Filter
R71	470KΩ 5%	½		BTS-470K-5%	Horiz. AFC Filter-See Note 5
R72	27KΩ 10%	½	27E273-2	BTS-27K	Feedback Network
R73	10KΩ 10%	½	27E103-2	BTS-10K	Feedback Network
R74	2200Ω 10%	½	27E222-2	BTS-2200	Sync. Phase Inverter Cathode
R75	470KΩ	½	27E474-2	BTS-470K	Horiz. AFC Grid-See Note 3
R76	33KΩ 10%	½	27E333-2	BTS-33K	Horiz. AFC Filter
R77	1500Ω 10%	½	27E152-2	BTS-1500	Horiz. MV Cathode-See Note 4
R78	5600Ω 5%	½	27E1009-8	BTS-5600-5%	Horiz. MV Plate
R79	150KΩ	½	27E154-2	BTS-150K	Horiz. MV Grid
R80	150KΩ	½	27E154-2	BTS-150K	Horiz. MV Plate
R81	10KΩ 10%	½	27E103-2	BTS-10K	Horiz. Peaking
R82	100Ω 10%	½	27E101-5		Parasitic Supp.
R83	470KΩ	½	27E474-2	BTS-470K	Horiz. Output Grid
R84	100Ω 10%	2	27E101-2	BW-2-100	Horiz. Output Cathode
R85	100Ω 10%	½	27E101-2		Parasitic Supp.
R86	20KΩ	5	27E1016	1 3/4A-20K	Horiz. Output Screen-Wire Wound
R87	47KΩ 10%	½	27E473-2	BTS-47K	Decoupling
R88	4700Ω	½	27E472-2	BTS-4700	Horiz. Linearity Coil Shunt- See Note 5
R89	3.3Ω 10%	½	27E1015-4		HV Rectifier Filament
R90	470KΩ	½	27E474		HV Filter
R91	680KΩ	½	27E684		HV Filter
R92	6000Ω	5	27E1016-3	1 3/4A-6000	Bleeder-Wire Wound
R93	3000Ω	3	27E1016-8	1 3/4A-3000	Focus Coil Shunt-Wire Wound
R94	1000Ω	3	27E1016-7	1 3/4A-1000	Series Focus Control
R95	68000Ω 10%	1	27E682-3	BTA-6800	Bleeder
R96	22KΩ 10%	2	27E223-2	BTS-22K	Bleeder
R97	330KΩ	½	27E334-2	BTS-330K	Isolation

Note 1. Some models use 1000Ω resistor in this application.
Note 2. Some models use 100KΩ resistor in this application.
Note 3. Some models use 4.7 Meg. resistor in this application.
Note 4. Some models may use series resistor in this application to obtain desired resistance.
Note 5. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	SENTINEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 2.1A	800VCT .250ADC	5VAC @ 3A	6.3VAC @ 1.2A SEC. 4 6.3VAC @ 1.2A SEC. 5 6.3VAC @ 7.7A	22E53			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	DC RESISTANCE		SENTINEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.					
T2	185Ω	975Ω	22E55	A-8111 ①	A-3000 ①	TBO-1 ①	Vert. Block Osc. Trans.
T3	300Ω Tap @ 9.5Ω	3.2Ω Tap @ .5Ω SEC. 2	22E54		HVO-6		Hor. Output Trans.
		0Ω					
T4	750Ω Tap @ 8.5Ω		22E58	A-8123	A-3037		Vert. Output Trans.
T5A	16Ω		30E162	DY-7	MD-70		Hor. Deflection Coil
B	68Ω						Vert. Deflection Coil
T6	320Ω		2E101				Focus Coil

① Drill one new mounting hole.

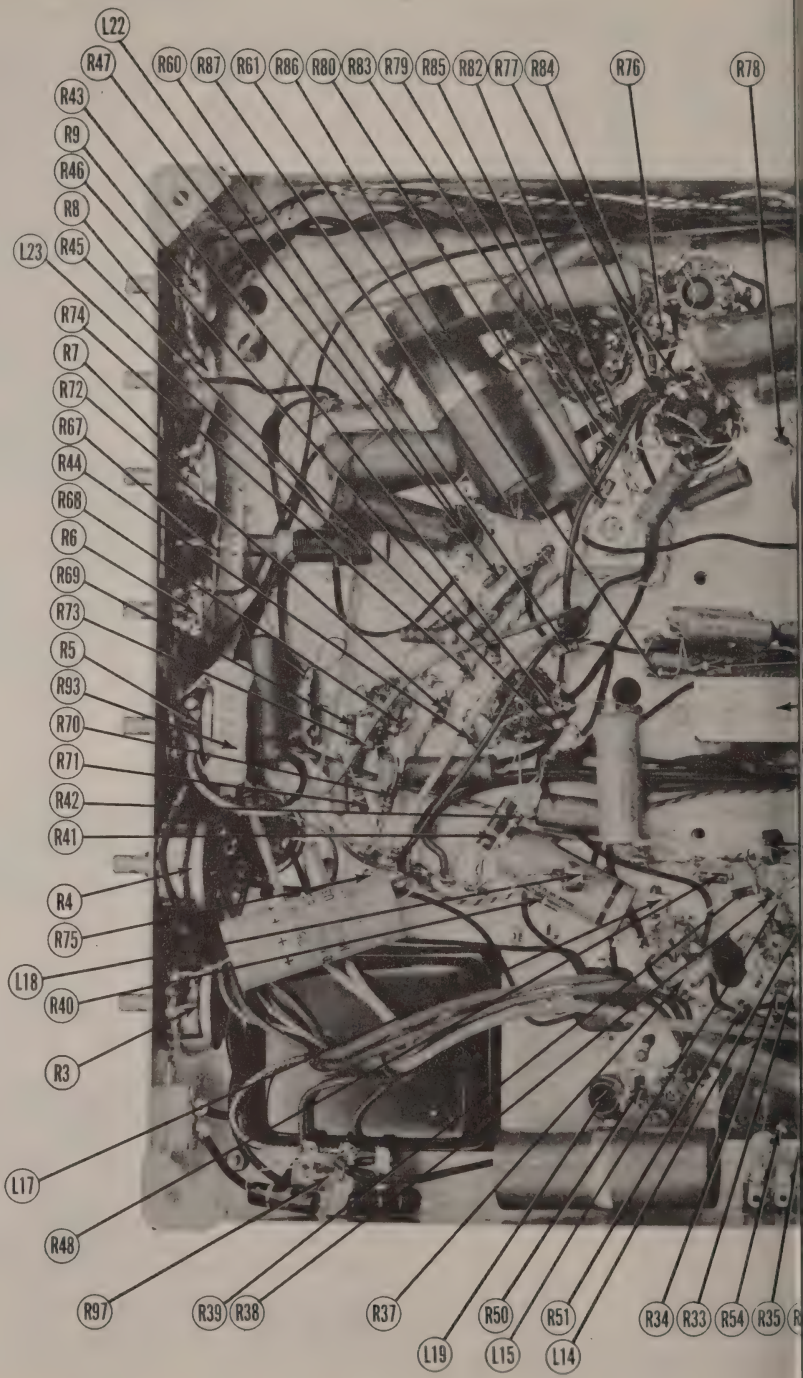
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SENTINEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T7	6400Ω	4.2Ω	435Ω	.7Ω	22E35-2	A-3878	A-2931	RO-13	

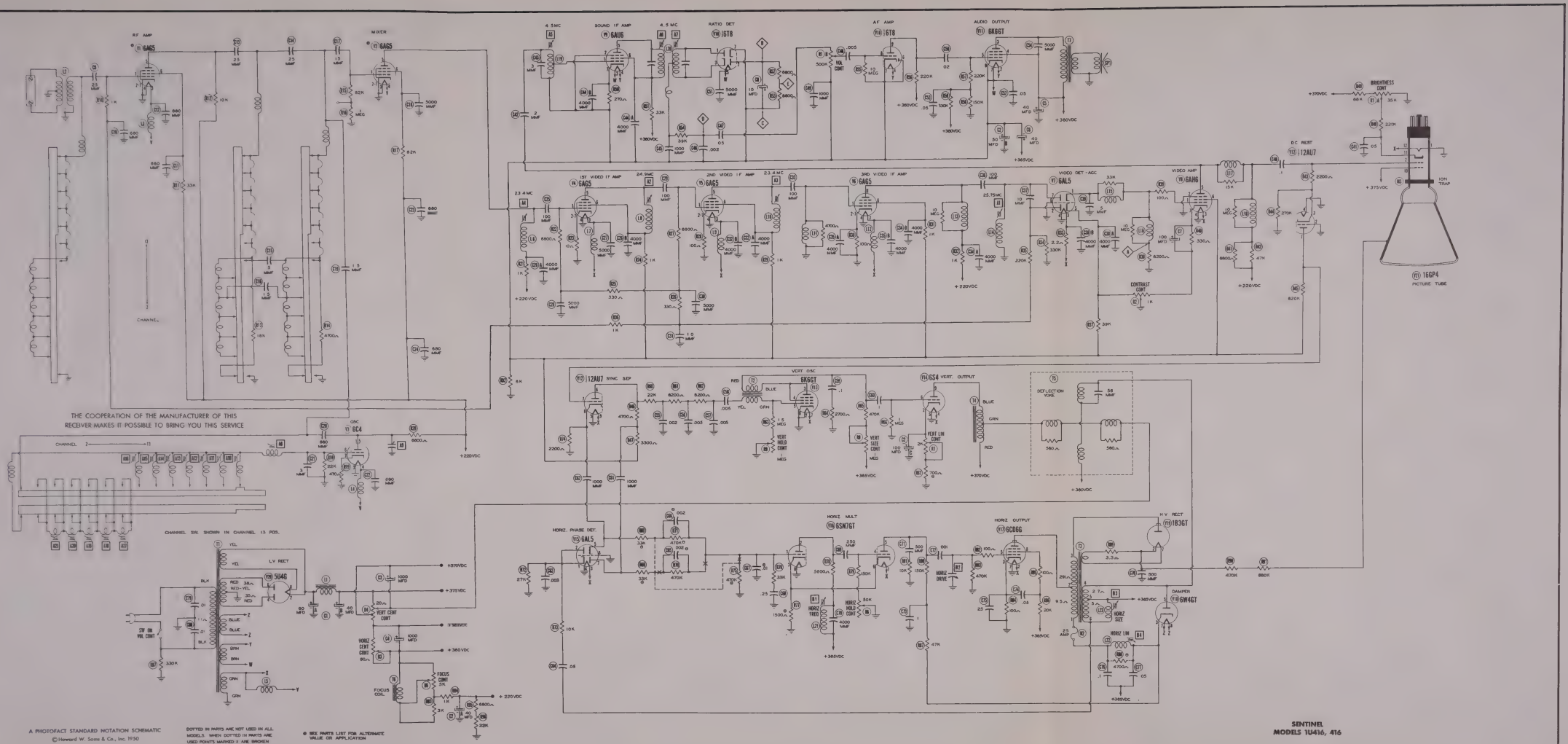
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	SENTINEL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	4.2Ω	1E43		10A4A	
	CONE DIA.	V. C. DIA.				
SP2	10"	1"				

PARTS LIST CONTINUED ON PAGE 15



CHASSIS BOTTOM VIEW-RESISTO


RF AMP
MIXER
SOUND IF AMP
RATIO DET
AF AMP
AUDIO OUTPUT
1ST VIDEO IF AMP
2ND VIDEO IF AMP
3RD VIDEO IF AMP
VIDEO DET - AGC
VIDEO AMP
D.C. REST
BRIGHTNESS CONT
CONTRAST CONT
PICTURE TUBE
ION TRAP
VERT OSC
VERT. OUTPUT
DEFLECTION YOKE
HORIZ. PHASE DET.
HORIZ MULT
HORIZ OUTPUT
H.V. RECT
DAMPER
LV RECT
CHANNEL SW. SHOWN IN CHANNEL 13 POS.
FOCUS COIL
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED # ARE BROKEN
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
SENTINEL
MODELS 1U416, 416

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

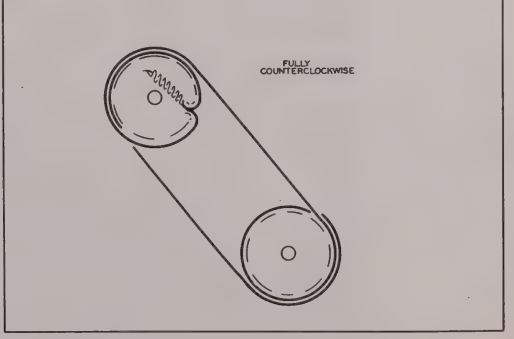
ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ma)	SENTINEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.250ADC	100Ω		22E52	C-2326 ①	C-2991 ①	TR-3300 ①①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SENTINEL PART No.	MEISSNER PART No.	IRC PART No.	NOTES
L2	Ant. Coil	.1Ω	0Ω				Part of tuner, #20E519
L3	Fil. Choke	0Ω					Part of tuner, #30E519
L4	Fil. Choke	0Ω					Part of tuner, #20E519
L5	Fil. Choke	.1Ω		2E78			
L6	1st Video IF	.1Ω		20E360			
L7	Fil. Choke	.8Ω		2E93		CLA-1.5	1.5 microhenries
L8	2nd Video IF	.2Ω		20E360			
L9	Fil. Choke	.8Ω		2E93		CLA-1.5	1.5 microhenries
L10	3rd Video IF	.2Ω		20E360			
L11	Grid Choke	3.7Ω		20E363-9			Wound on 4.7KΩ resistor
L12	Fil. Choke	.8Ω		2E93		CLA-1.5	1.5 microhenries
L13	RF Choke	2.5Ω		20E363-8			Wound on 10 Meg. resistor
L14	4th Video IF	.2Ω		20E360			
L15	Peaking	8.5Ω		20E363-3			Wound on 33KΩ resistor
L16	Peaking	25Ω		20E363-6			Wound on 10 Meg. resistor
L17	Peaking	13Ω		20E363-3			Wound on 15KΩ resistor
L18	Peaking	16Ω		20E363-10			Wound on 10 Meg. resistor
L19	Sound IF	2.8Ω		20E361			Tap at 1Ω
L20	Ratio Det. Trans.	3.7Ω	.6Ω	20E537			
L21	Horiz. Freq.	45Ω		20E409			
L22	Horiz. Lin.	22Ω		20E524			
L23	Horiz. Size	.1Ω		20E415			

MISCELLANEOUS

ITEM No.	PART NAME	SENTINEL PART No.	NOTES
M1	RF Tuner	20E519	
M2	Fuse	40E9	.25A 250V Type 3AG
M3	Ion Trap	15E174	
B2	Trimmer	24E16-2	Horiz. drive 150-300MMF
	Built-in Antenna	30E550	
	Safety Glass	9E32	
	Knob	37E59-10	Channel selector, blonde
	Knob	37E59-6	Channel selector, mahogany
	Knob	37E59-9	Off-Volume, blonde
	Knob	37E59-5	Off-Volume, mahogany
	Knob	37E97-5	Contrast, blonde
	Knob	37E97	Contrast, mahogany
	Knob	37E97-6	Brightness, blonde
	Knob	37E97-2	Brightness, mahogany
	Knob	37E61-3	Antenna, blonde
	Knob	37E61	Antenna, mahogany



CONTRAST CONTROL DRIVE CORD STRINGING

SILVERTONE
MODEL 215 (Ch. 528.174)

SILVERTONE
MODEL 215 (Ch. 528.174)

SILVERTONE MODEL 215

TRADE NAME Silvertone, Model 215 (Ch. 528.174)
SUPPLIER Sears, Roebuck and Co., 925 So. Homan St., Chicago, Illinois
TYPE SET Three Power Operated Portable Superheterodyne Receiver With Loop Antenna
TUBES (Four) Types 1R5 Converter, 1U4 IF Amp., 1U5 Det-AVC-AF, 3V4 Power Output

POWER SUPPLY 110-120 Volts AC-DC or 3Volts "A" Supply And 67.5 Volts "B" Supply
RATING .11 Amp. @ 117 Volts AC or 148 MA @ 3 Volts DC And 12 MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST 535-1625KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer parallel with base of dial.
Use battery power if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.
Loop should be maintained in same relative postion to chassis as when receiver is in cabinet.
Volume control should be at maximum postion. Output of signal generator should be no higher than is necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD.	High side to stator on rear section of tuning gang. Low side to chassis.	455KC (400Ω mod)	Tuning gang fully open	Across voice coil.	A1, A2, A3, A4,	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.	.1MFD	High side to stator on rear section of tuning gang. Low side to chassis.	1625KC	Tuning gang fully open.	Across voice coil	A5,	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
3.		Loop	1400KC		Across voice coil	A6,	Fashion loop of several turns of wire and radiate signal into loop receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

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PARTS LIST AND DESCRIPTIONS

SILVERTONE MODEL 215

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1U4	1U4	6AR	
V3	Det.-AVC-AF	1U5	1U5	6BW	
V4	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	T18-297	PRS106D20A		EDL5315C		TVA-3427	Filter Red
B	30	150				10			Filter Yellow
C	100	10							Filament Bypass Blue
C2	.05	200	T16-152	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	47		T15-305	SI47	D6-470	5W5Q5	GP1K-47	19C25	OSC. Grid Cap
C4	.005	600	T16-153	P688-005	D6-502	PTE6D5		6TM-D5	IF Grid Filter
C5	.02	400	T16-150	P488-02	DF-203	PTE4S2		4TM-S2	Decoupling
C6A	200		T17-103	SI200	D6-201	5W5T2	GP2K-200	19C30	Diode RF Filter
B	5000			BPD-005	DD-502	PTE6D5	811-005	29C1	Audio Coupling
C	5000			BPD-005	DD-502	PTE6D5	811-005	29C1	AF Amp. Screen
D	100			SI100	D6-101	5W5T1	GP1K-100	19C11	AF Amp. Plate
E	5000			BPD-005	DD-502	PTE6D5	811-005	29C1	Audio Coupling
C7	.005	600	T16-153	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Output Plate Bypass
C8	.02	400	T16-150	P488-02	DF-203	PTE4S2		4TM-S2	Filament Bypass
C9	.02	400	T16-150	P488-02	DF-203	PTE4S2		4TM-S2	Line Isolation
C10	.05	400	T16-179	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter

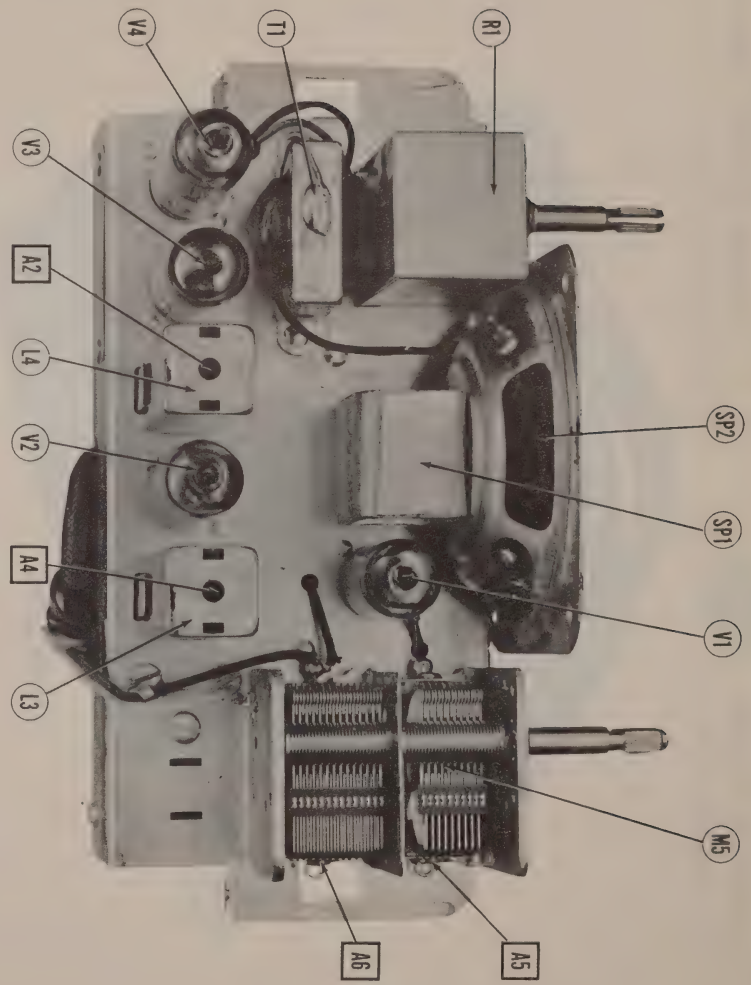
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1 Meg	½	T24-187	Q13-137	AG-63-Z	BSK-70-S	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach To R1A Per Instructions.
C	Switch		Not Req.	76-2	SWB-2	Not Req.	Attach To R1A Per Instructions.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	100KΩ	½	A60-727	BTS-100K	Mixer Grid
R3	2.2 Meg.	½	A60-726	BTS-2.2Meg.	AVC Network
R4	10 Meg.	½	A60-728	BTS-10 Meg.	AVC Network
R5	10 Meg.	½	A60-728	BTS-10 Meg.	AF Amp. Grid
R6	4.7 Meg.	½	A60-669	BTS-4.7 Meg.	AF Amp. Screen
R7	1 Meg.	½	T60-668	BTS-1Meg.	AF Amp. Plate
R8	220Ω	½	A60-753	BTS-220	Decoup.
R9	2.2 Meg.	½	A60-726	BTS-2.2 Meg.	Output Grid
R10	2700Ω	½	T60-711	BTS-2700	Filter
R11	270Ω	½	T60-771	BTS-270	Bias Network
R12	1 Meg	½	T60-668	BTS-1 Meg	Voltage Divider
R13	680Ω	½	T60-708	BTS-680	Filament String
R14	820Ω	½	T60-709	BTS-820	Filament String
R15	47KΩ	½	A60-730	BTS-47K	IF Amp. Grid
R16	470Ω	½	T60-770	BTS-470	Filament String
R17	1500Ω	½	T60-739	BTS-1500	Filament String
R18	2000Ω	10	T60-757	13/4A-2000	Filament Dropping - Wire Wound
R19	27Ω	½	A60-690	BW-½-27	Filament String
R20	160Ω	3	T60-725*		Surge Limiter - Wire Wound

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	9500Ω	4.1Ω	325Ω	.4Ω	T80-256	A-3329	A-2927②		② Drill new Mtg. holes

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	SILVERTONE PART No.	VIKING PART No.	QUAM PART No.	
SP1	PM	4.1Ω	T79-382	35J4①	3AO7①	① Drill and tap magnet frame
	CONE DIA.	V. C. DIA.				
SP2	3-7/16"	9/16"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.	
L1	Loop Ant.	2.6Ω		T82-68		
L2	Osc. Coil	3.1Ω	7.2Ω	T10-554	14-1074	
L3	1st IF	20Ω	20Ω	T10-508	16-6668	
L4	2nd IF	20Ω	20Ω	T10-508	16-6669	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	SILVERTONE PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.061A	T83-642	NB-5	5M4	

BATTERIES

ITEM No.	VOLTAGE	SILVERTONE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	3 V "A"	4650	950			2R			2 Required
M3	67.5 V "B"	6480		467			XX45		

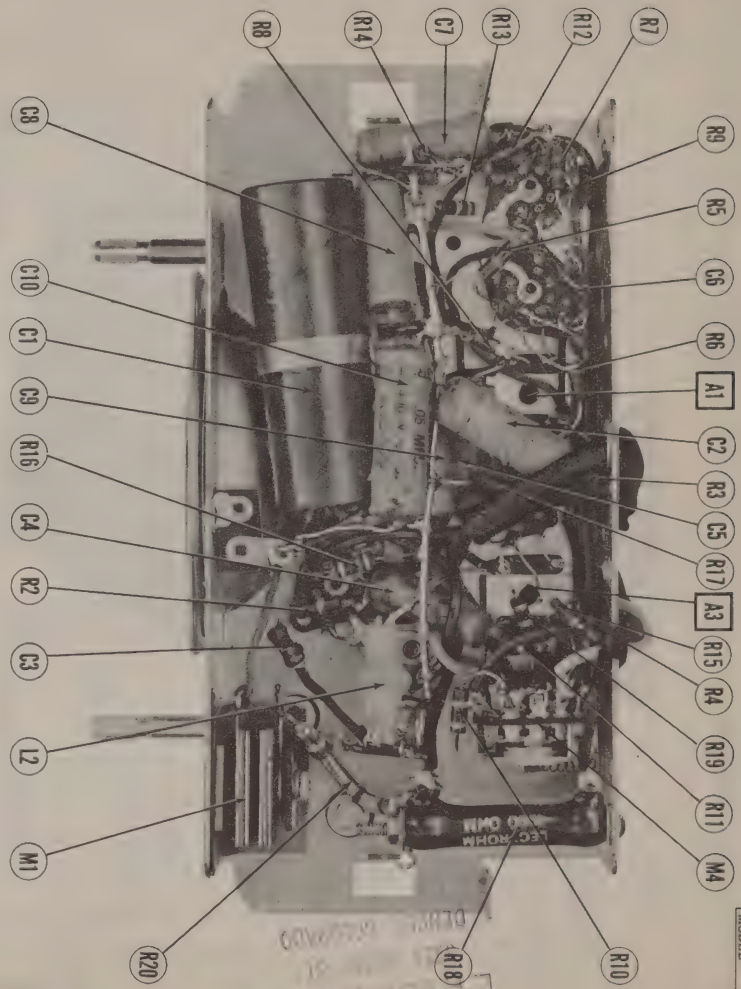
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M4	Switch		
M5	2 Gang Var. Cap	T19-209	AC/DC - Battery
	Cabinet	T42-468	(35-479MMF, 35-201MMF)
		T52-307	

SET 117

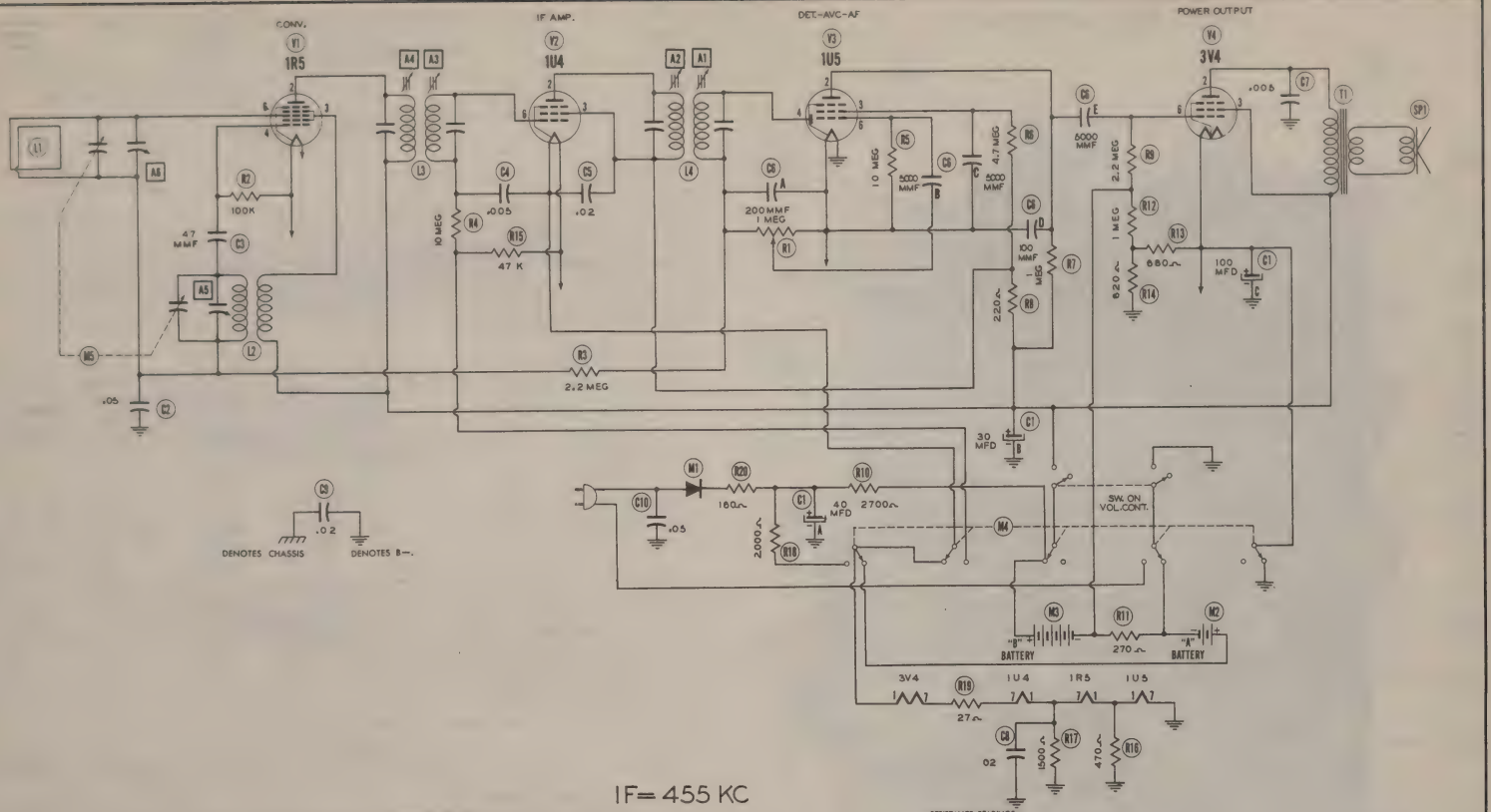
FOLDER 13

CHASSIS—BOTTOM VIEW



SILVERTONE MODEL 215

SILVERTONE MODEL 215



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	1.6VDC	67VDC	67VDC	8-11.6VDC	1.6VDC	.2VDC	3VDC
V 2	1U4	3VDC	65VDC	65VDC	.2VDC	3VDC	.2VDC	4.5VDC
V 3	1U5	1.6VDC	5.5VDC	3.8VDC	.4VDC	.4VDC	-.1VDC	0V
V 4	3V4	5.8VDC	65VDC	67VDC	.8VDC	7.3VDC	.4VDC	8.5VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†2.9KΩ	†2.9KΩ	100KΩ	*	3.2 Meg.	*
V 2	1U4	*	†3.1KΩ	†3.1KΩ	3.2 Meg.	*	10 Meg.	*
V 3	1U5	*	†1 Meg.	†4.7 Meg.	1 Meg.	*	10 Meg.	0Ω
V 4	3V4	*	†3.2KΩ	†2.9KΩ	1 Meg.	*	3.2Meg.	*

V & R TAKEN IN AC-DC POSITION

* DO NOT USE OHMETER TO MEASURE FILAMENT RESISTANCE
† MEASURED FROM OUTPUT OF M1 (POWER SWITCH ON)

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

WEBSTER-CHICAGO
MODEL 288

WEBSTER-CHICAGO
MODEL 288

WEBSTER-CHICAGO MODEL 288

TRADE NAME	Webster-Chicago, Model 288
MANUFACTURER	Webster-Chicago, 5610 West Bloomingdale Ave., Chicago 39, Illinois
TYPE SET	AC Operated Wire Recorder
TUBES (FIVE)	Types 6SC7 Pre- Amp.-1st AF Amp., 6V6GT Oscillator, 6SC7 2nd AF-Phase Inv., 6SN7GT Power Output, 6X5GT Rectifier
POWER SUPPLY	110-120 Volts AC RATING .64 Amp. at 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

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PARTS LIST AND DESCRIPTIONS

WEBSTER-CHICAGO
MODEL 288

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: WEBSTER CHICAGO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Pre-Amp-AF Amp		6SC7	8S	
V2	Oscillator		6V6GT	7AC	
V3	2nd Af-Phase Inv.		6SC7	8S	
V4	Power Output		6SN7GT	8BD	
V5	Rectifier		6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: WEB.-CHIC. PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	25	450		AF44J		UP2245		TVL2755	■ Filter
B	15	350							▲ Filter
C2A	15	350		AF3318A		UP2235C		TVL-3675	■Decoupling
B	15	250				BR502A			▲ Decoupling
C	40	25							Output Cathode
C3*	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Tone Comp.
C4	.01	100		P488-01	D6-103	PTE4S1	811-01	4TM-S1	Audio Coupling
C5	.01	400		P488-01	D6-103		811-01	4TM-S1	Audio Coupling
C6	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C7	.00075	600		1468-00075	D6-751	1 W5T7	GP2K-750	1FM-37	Tone Comp.
C8	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Audio Coupling
C9	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Audio Coupling
C10	.002	600		P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Tone Comp.
C11	.002	600		P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Osc. Grid Cap.
C12	.002	600		P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Fixed Trimmer
C13	.002	600		P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Osc. Screen Bypass
C14	.0001	600		1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Tone Comp.
C15	.0001	600		1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Tone Comp.
C16	.005	600		P688-005	D6-502	PTE-6D5	811-005	6TM-D5	Tone Comp.
C17	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Osc. Decoupling
C18	.015	600		P688-015	DF-203	PTE6S15		6TM-S15	Line Filter
C19	.015	600		P688-015	DF-203	PTE6S15		6TM-S15	Line Filter

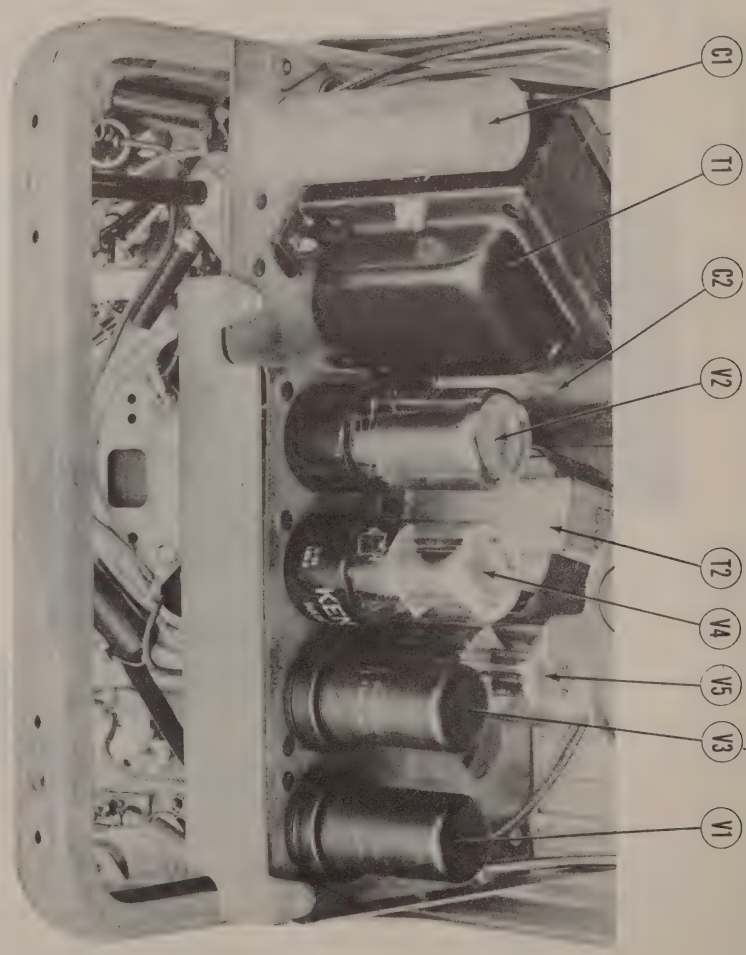
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WEB.-CHIC. PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1	250KΩ			Q18-130X			Volume Control - Tapped@ 75KΩ
R2 A	1 Meg			Q13-137	AG-63-Z	BSK-70-S	Tone Control
B	Shaft			Not Req.	KSS-3	Not Req.	Attach to R2A Per Instructions
C	Switch			76-1	SWB	Not Req.	Attach To R2A Per Instructions
R3 A	1 Meg.			Q11-137	AG-61-Z	B-69 *	Indicator Level Control
B	Shaft			RQ	FKS-1/4	Not Req.	Attach to R3A Per Instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WEB.CHIC. PART No.	IRC PART No.	IDENTIFICATION CODES
R4	1 Meg.			BTS-1Meg	Mike Shunt
R5	4.7 Meg.			BTS-4.7 Meg.	Pre Amp,Grid
R6	2200Ω			BTS-2200	Pre Amp. Plate
R7	150KΩ			BTS-150K	Pre Amp. Plate
R8	1000Ω			BTS-1000	Pre Amp Decoup.
R9	2400Ω			BTS-2200	Tone Compensation
R10	4.7Meg			BTS-4.7 Meg	1st AF Amp Grid.
R11	120KΩ			BTS-120K	1st AF Amp Plate
R12	75KΩ			BTS-68K	Decoup.- See Note 1
R13	68KΩ			BTS-68K	Volu me Control Shunt
R14	39KΩ			BTS-39K	Tone Compensation
R15	120KΩ			BTS-120K	2nd AF Amp.Grid Leak
R16	1000Ω			BTS-1000	2nd AF Amp.Cathode
R17	470KΩ			BTS-470K	2nd AF Amp.Plate
R18	5100Ω			BTS-4700	Phase Inverter Grid - See Note 2
R19	470KΩ			BTS-470K	Phase Inverter Plate
R20	75KΩ			BTS-68K	Osc. Grid - See Note 1
R21	22KΩ			BTS-22K	Osc. Screen
R22	3900Ω			BTS-3900	Feed Back
R23	2000Ω	2		BTS-2000	Decoup.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R24	120K	½		BTS-120K	Tone Compensation
R25	1000Ω	1		BTA-1000	Tone Compensation
R26	220KΩ	½		BTS-220K	Output Grid
R27	270KΩ	½		BTS-270K	Output Grid
R28	820Ω	½		BTS-820	Output Cathode
R29	270KΩ	½		BTS-270 K	Indicator Level Network
R30	470KΩ	½		BTS-470K	Indicator Level Network
R31	1.8Ω	1		BW-1-1.8	Balancing Network - Wire Wound
R32	1.8Ω	1		BW-1-1.8	Balancing Network - Wire Wound
R33	4.7Ω	1		BW-1-4.7	Balancing Network -Wire Wound
R34	3.3Ω	2		BW-2-3.3	Balancing Network - Wire Wound
R35	1000	1		BTA-1000	Filter

Note 1. Some Models Use 68KΩ Resistor In This Application.
Note 2. Some Models Use 4300Ω Resistor In This Application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA WEB.-CHIC. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② .64A	640 VCT .045ADC	6.3VAC ③ 2.5A		68P006	PC-8407①	P-3150	

① Drill New Mtg. Holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA WEB.-CHIC. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T2	20000Ω CT	3.6Ω	400Ω CT	6Ω Tap ① .2Ω .2Ω SEC. 2 ② .2Ω	67P015			RO-18 ④	

Form 4

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA WEB.- CHIC. PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	PM	3.6 Ω	76P020	ST-803 Mod. P525-V	52A1	
	CONE DIA.	V. C. DIA.				
SP2	4 7/8 "	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA WEB.- CHIC. PART No.	MEISSNER PART No.
L1	Osc. Coil	0Ω	13Ω	65P024	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA WEB.- CHIC. PART No.		NOTES
M1	Bayonet	7.5	.2	White			Type No. 51

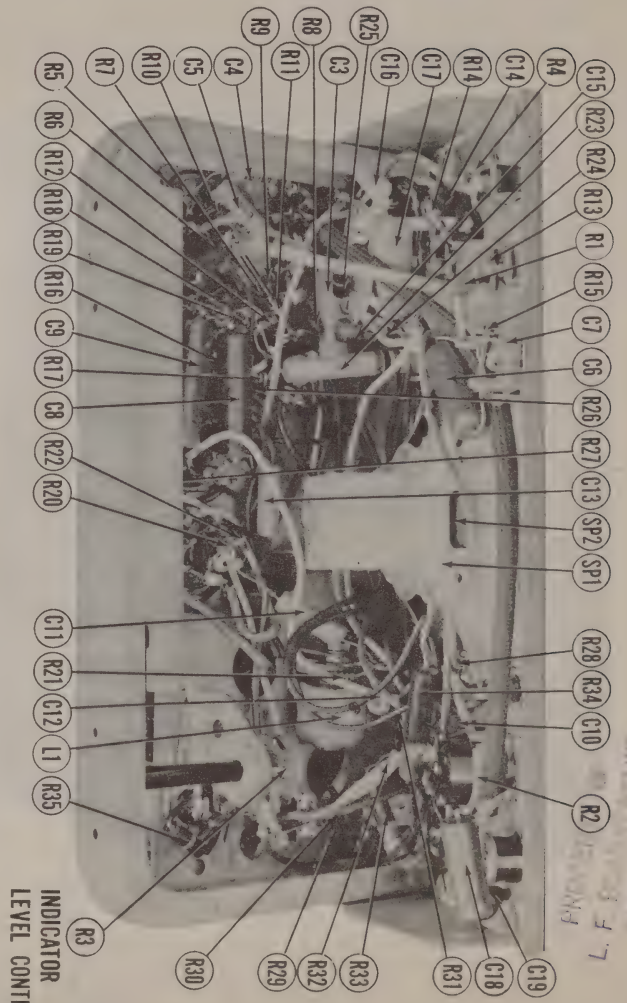
MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M2	Neon Lamp		Type NE-51
M3	Fuse		1 Amp., Type AGC
M4	Switch	32P063	Record - Listen
M5	Switch	32P062	Output Selector

SET 117

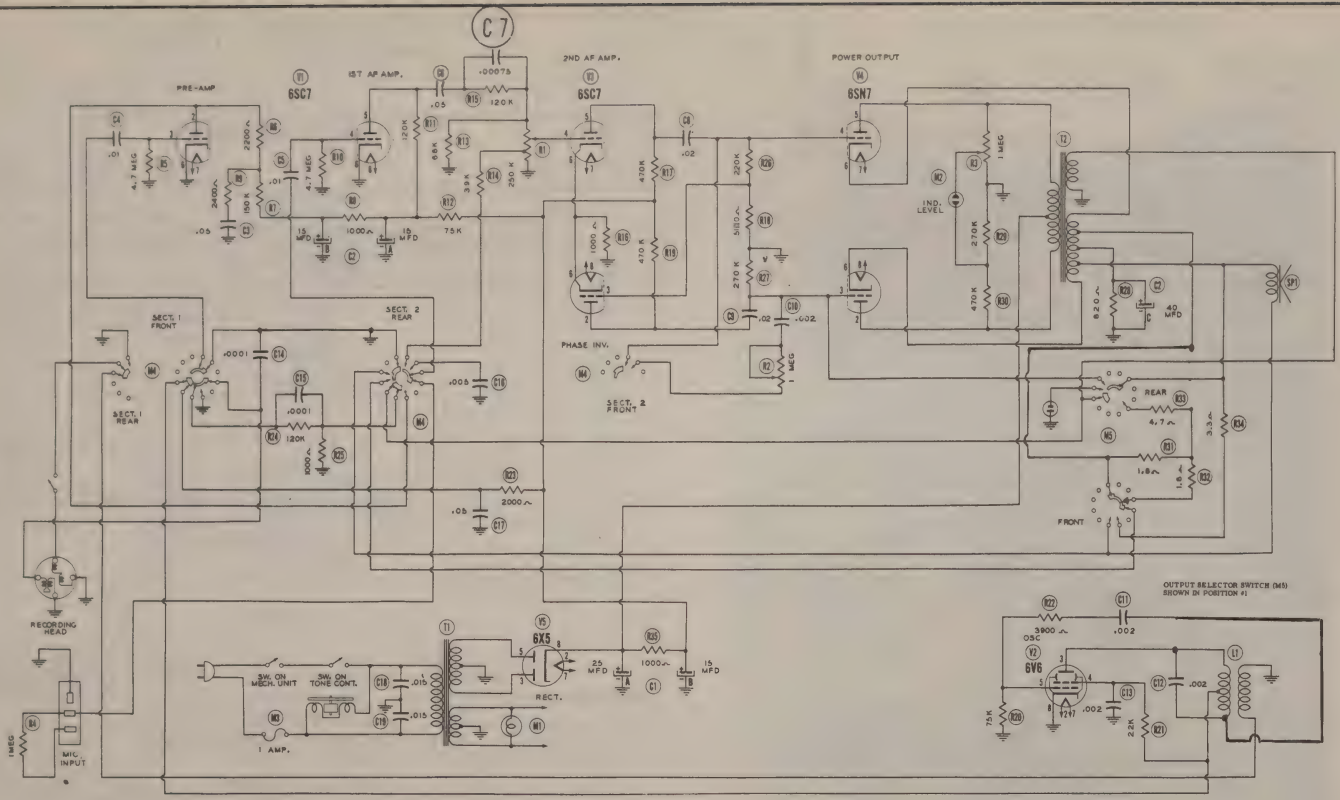
FOLDER 14

CHASSIS—BOTTOM VIEW



WEBSTER-CHICAGO 288 MODEL

WEBSTER-CHICAGO MODEL



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0V.	85VDC	-.7VDC	-.8VDC	95VDC	0V.	¶	¶
V 2	6V6GT	0V.	¶	▲0V •275VDC	▲0V •260VDC	▲0V +.2VDC	▲0V +.2VDC	¶	0V.
V 3	6SC7	0V.	▲95VDC •80VDC	0V.	0V.	▲95VDC •80VDC	±1.5VDC ±1.5VDC	¶	¶
V 4	6SN7GT	0V.	▲280VDC •250VDC	▲18VDC •14VDC	0V.	▲280VDC •250VDC	▲18VDC •14VDC	¶	¶
V 5	6X5GT	0V.	¶	308VAC	330VDC	305VAC	▲285VDC •295VDC	¶	▲285VDC •355VDC

¶ 6.3VAC MEASURED ACROSS FILAMENTS.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0Ω	†330KΩ	4.7 Meg.	4.3 Meg.	†195KΩ	0Ω	.1Ω	.1Ω
V 2	6V6GT	0Ω	.1Ω	▲Inf. †•25KΩ	Inf. †•25KΩ	75KΩ	79KΩ	.1Ω	0Ω
V 3	6SC7	0Ω	†470KΩ	5.1KΩ	0Ω	†470KΩ	10000	.1Ω	.1Ω
V 4	6SN7GT	270KΩ	†200Ω	850KΩ	225KΩ	†200KΩ	850KΩ	.1Ω	.1Ω
V 5	6X5GT	0Ω	.1Ω	200Ω	†10000	200Ω	†75KΩ	.1Ω	70KΩ

▲ TAKEN IN RECORD POSITION.
• TAKEN IN "LISTEN" POSITION.
† MEASURED FROM PIN 8 OF V5.

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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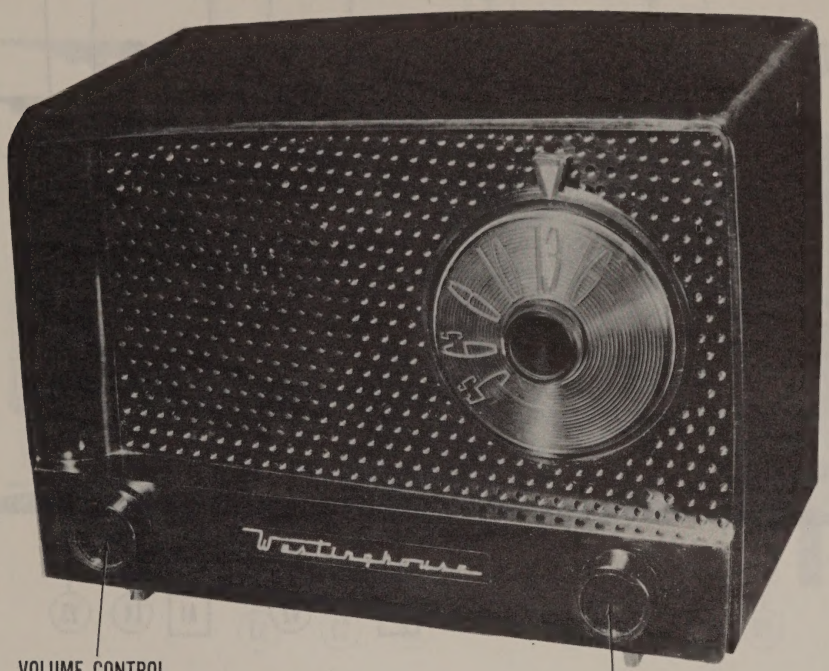
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

WESTINGHOUSE MODELS H-318T5, H-320T5, U, H-321T5, U, H-322T5, U, H-323T5, U

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

WESTINGHOUSE MODELS H-318T5, H-320T5, U, H-321T5, U, H-322T5, U, H-323T5, U



WESTINGHOUSE MODEL H318T5

TRADE NAME	Westinghouse, Models H-318T5, U, H-320T5, U (Ch. V-2157, U), H-321T5, U, H-322T5, U (Ch. 2157-1, -1U), H-323T5, U (Ch. V-2157-2, -2U)
MANUFACTURER	Westinghouse Electric Corp., Home Radio Div., Sunbury, Pa.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AV6 DET-AVC-AF, 50C5 Power Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC RATING .23 Amp. at 117 Volts AC
TUNING RANGE-BROADCAST	540-1615KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed and set pointer to small dot to the left of the "55" calibration mark on dial scale.

Use an isolation transformer to protect the test equipment.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (Grid) of 12BE6 (V1). Low side to chassis.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	.1MFD	"	1615KC	"	"	A5	"
3.		Loop	1400KC	Tune for max. output	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 1, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

WESTINGHOUSE MODEL H-318T5

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	DET.-AVC-AF	12AV6	12AV6	7BT	
V4	Power Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	V-9991	PRS150/50-50		EDL5515		TVA-2453	Filter-Red
B	50	150							Filter-Orange
C2	.05	200	RCP10W2503M	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3A	220		V-9634-1	SI220	D6-221	5W5T25	GP2K-220	34C3	Diode RF Filter
B	2000			BPD-002	DD-202	PTE6D2	811-002		Audio Coupling
C	220			SI220	D6-221	5W5T25	GP2K-220		AF Amp. Plate
D	5000			BPD-005	DD-502	PTE6D5	811-005		Audio Coupling
C4	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Output Plate Byp.
C5	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		72P52	Line Isolation *
C6	.05	400	RCP10W4503M	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter
C7	.02	200	RCP10W2203M	P488-02	DF-202	PTE4S2		2TM-S2	Tone Comp. †

* Used only in chassis V-2157-U, V-2157-1U, and V-2157-2U.
† Used only in chassis V-2157-2 and V-2157-2U.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WESTING. PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	V-9993-1	Q13-133	AM-60-Z	BSK-60-S	Volume control-See note 1
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	Not Req.	Attach to R1A per instructions

Note 1. Chassis V-2157-2, 2U uses control part number V-9993-2.

RESISTORS

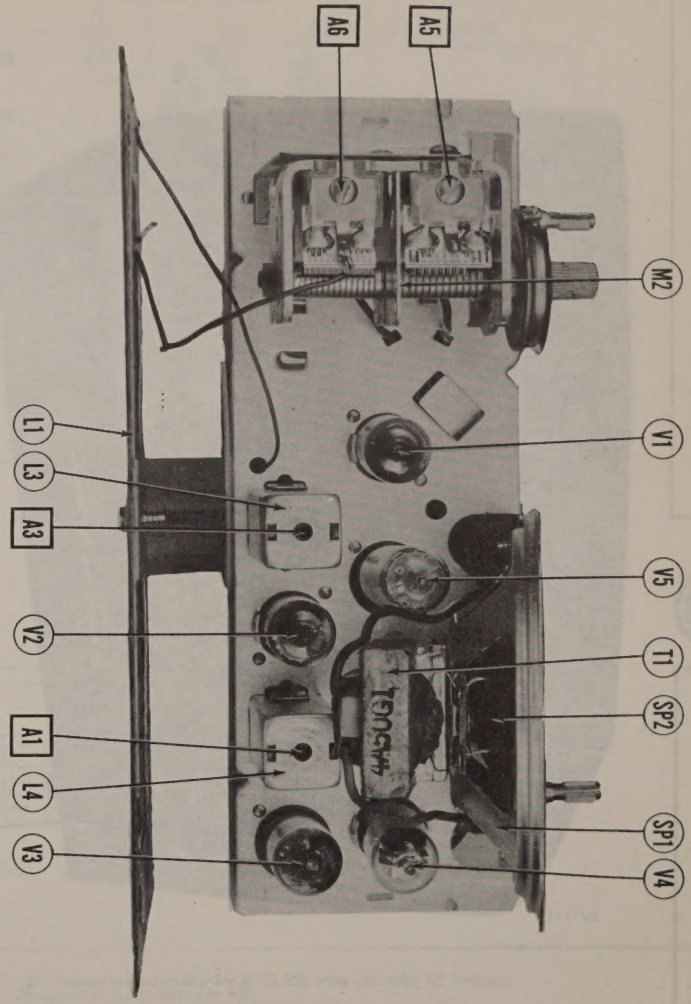
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WESTING. PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	RC20AE223M	BTS-22K	Osc. Grid
R3	3.3 Meg.	½	RC20AE335M	BTS-3.3 Meg.	AVC Network
R4	68Ω	½	RC20AE680M	BW-½-68	IF Amp. Cathode
R5	10 Meg.	½	RC20AE106M	BTS-10 Meg.	AF Amp. Grid
R6	330KΩ	½	RC20AE334M	BTS-330K	AF Amp. Plate
R7	470KΩ	½	RC20AE474M	BTS-470K	Output Grid
R8	120Ω	½	RC20AE121M	BTS-120	Output Cathode
R9	1000Ω	1	RC30AE102M	BTA-1000	Filter
R10	10KΩ	½	RC20AE103M	BTS-10K	Tone Compensation-See Note 2

Note 2. Used only in chassis V-2157-2, 2U.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: WESTING. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1A	2000Ω	3.7Ω	235Ω	.8Ω	③Part of SP1A ④Part of SP1B	A-3332 ①	A-3025 ①	RO-2 ①	① Bend mounting tabs down and mount on original bracket. ③ Used in chassis V-2157, V-2157U, V-2157-1, V-2157-1U. ④ Used in chassis V-2157-2, V-2157-2U.
B									

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: WESTING. PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.				
SP1A	PM	3.7Ω	V-9727-1 ③	ST-113 ②		② Remount output transformer
B	PM		V-10079-1 ④	MOD. P4-X	4A07 ②	③ Used in chassis V-2157, V-2157U, V-2167-1, V-2757-1U.
	CONE DIA.	V. C. DIA.				④ Used in chassis V-2157-2, V-2157-2U
SP2A	4"	9/16"				
B	4"					

R F COILS

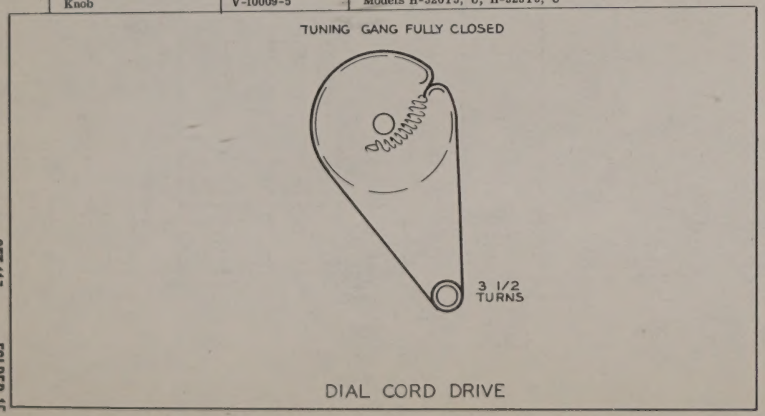
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: WESTING. PART No.	REPLACEMENT DATA: MEISSNER PART No.	
L1A	Loop Ant.	3.2Ω		V-9994		Chassis V-2157
B	Loop Ant.			V-10001		Chassis V-2157-1, V-2157-2, V-2157-2U
L2	Osc. Coil	1Ω	12Ω	V-9992	14-1073	
L3	1st IF	20Ω	20Ω	V-9735-1	16-6758	
L4	2nd IF	20Ω	20Ω	V-9735-1	16-6758	

DIAL LIGHTS

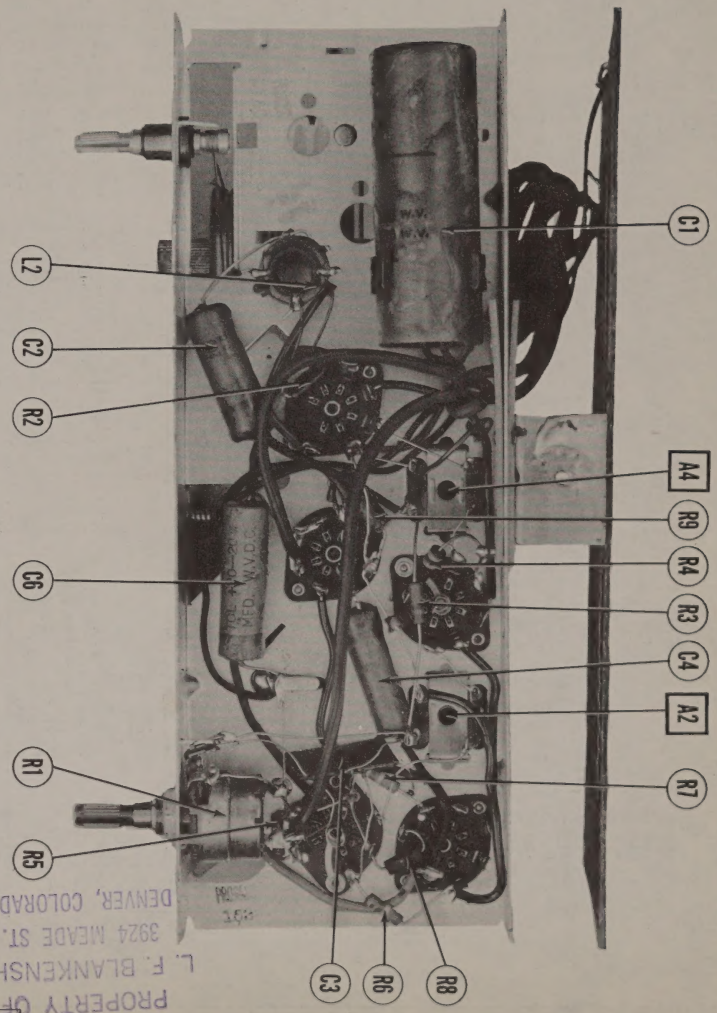
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: WESTING. PART No.		NOTES
M1	Bayonet	6-8	.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	WESTINGHOUSE PART No.	NOTES
M2A	2 Gang Var. Cap.	V-100047	(25-404MMF, 17-149MMF, (Ch. V-2157)
B	2 Gang Var. Cap.	V-9990	(Ch. V-2157-1, -2)
	Dial Pointer	V-10002-2	(Ch. V-2157-1, -2)
	Knob	V-10009-1	Models H-318T5, U, H-321T5, U
	Knob	V-10009-5	Models H-320T5, U, H-323T5, U



CHASSIS—BOTTOM VIEW

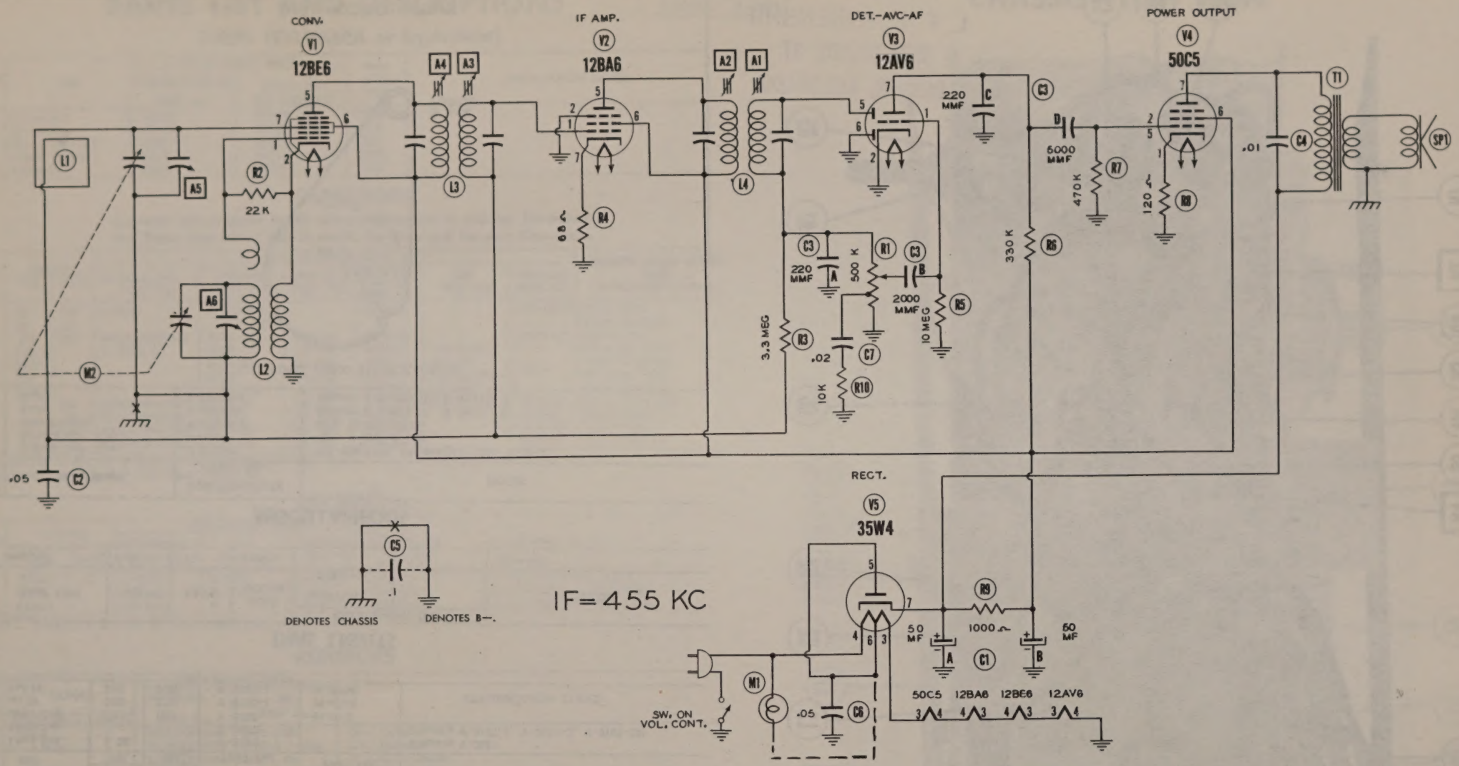


PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

WESTINGHOUSE
MODEL H-318T5

WESTINGHOUSE
MODEL H-318T5

SET 117 FOLDER 15



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	§-7.5VDC	0V	12VAC	23VAC	85VDC	85VDC	-.2VDC
V 2	12BA6	-.2VDC	0V	23VAC	35VAC	85VDC	85VDC	.6VDC
V 3	12AV6	-.6VDC	0V	12VAC	0V	-.4VDC	0V	45VDC
V 4	50C5	4.8VDC	0V	85VAC	35VAC	0V	85VDC	95VDC
V 5	35W4	85VDC	100VDC	85VAC	117VAC	100VAC	100VAC	100VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1Ω	13Ω	25Ω	†1KΩ	†1KΩ	3.8 Meg.
V 2	12BA6	3.8 Meg.	0Ω	25Ω	36Ω	†1KΩ	†1KΩ	68Ω
V 3	12AV6	10 Meg.	0Ω	13Ω	0Ω	500KΩ	0Ω	†330KΩ
V 4	50C5	120Ω	470KΩ	85Ω	36Ω	470KΩ	†1KΩ	†235Ω
V 5	35W4	†1KΩ	†0Ω	85Ω	120Ω	110Ω	100Ω	120KΩ

† MEASURED FROM PIN 7 OF V5

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.